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"It will flourish, if naturalists, chemists, antiquaries, philologers, and men of science in different parts of *Asia*, will commit their observations to writing, and send them to the Asiatic Society at Calcutta. It will languish if such communications shall be long intermitted: and it will die away, if they shall entirely cease."—

SIR WM. JONES.

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1861.

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JOURNAL

OF THE

ASIATIC SOCIETY.

No. I. 1860.

Account of a Visit to Barren Island in March 1858. *By* G. von Liebig, M. D.*

Barren Island is a volcanic island, situated in Lat. 12° 17′ N. and in Long. 93° 54′ E. Its smallest distance from the Andaman Archipelago is in a straight line only 36 miles East. The distance from the nearest point of the main land, near Tavoy, is about 270 miles W. S. W. It lies not far out of the straight course between Port Blair and Amherst, about 63 miles from the former, and 330 from the latter place. The *Semiramis* approached the island on the morning of the 19th March, 1858, coming from the N. E., and steamed round it by S. keeping close to the shore, until the ship was opposite the entrance of the crater (Fig. 2.) bearing about W. and by N. from the centre of the island, where she hove to, and we landed.

It is stated in former accounts, that all round the island the lead finds no bottom at 150 fathoms, only $\frac{1}{4}$ mile distance from the shore. Captain Campbell found however ground at that distance on one side of the island, its centre bearing N. E. at a depth varying from $4\frac{1}{2}$ to 14 fathoms.

Nearing the island from the North and passing round to the South East of it, it looks from a distance like an oval-topped hill; but coming closer, the sides of the mountain are discovered to belong to a steep circular elevation, sending out spurs towards the sea and enclosing a central valley. The sides of the enclosing circle being low-

* An account of a previous visit to this Island by Dr. G. R. Playfair, Bengal army, will be found in the 25th No. of the records of the Government of India.

er in the direction of the spectator, the upper circumference of this valley is seen in the shape of an oval ring, formed by the crest of the surrounding ridge. In the middle of this ring, the upper part of a regular cone is visible, from the apex of which small white vapour-like clouds emanate. It is also distinguished from the surrounding darker masses by its grey colour, and some large white marks on it, like fields of snow. An entrance is not discernible.

The slopes towards the sea are generally covered with shrubby vegetation, presenting however some bare patches towards the upper edge; small trees grow about the base, where large rounded stones are washed by the sea.

Turning now to the S. and S. W. the enclosing wall is higher than the cone and the crest of the opposite ridge, and both therefore disappear from the view. On this side the vegetation down the spurs to the sea may be called rich, and consists of different forest trees of moderate height, interspersed with graceful palms; and where the descent is rocky, the rocks are frequently covered with ferns.

Passing to the westward of the centre of the island, and continuing the survey towards the northern end, one of the first turns discovers a large gap in the circular wall, extending quite down to the base of the island, through which the interior of the valley, with the cone in the middle, opens at once into full view.

The sides of this gap or fissure in the circular wall form a regular cut or short transverse valley through it, opening towards the sea into a small bay, and on the other side into the circular valley, to which it is the only way of access. Opposite this entrance, in the centre of the valley, rises the cone of grey ashes, and surrounding its base the bottom of the valley is filled with black masses of cold lava, which are continued like a congealed stream through the gap, breaking off abruptly when they arrive near the water's-edge. At its termination the steam is about 10 or 15 feet high, and its breadth seems less than farther up. It looks like a black perpendicular wall drawn across the entrance and facing the sea.

The lava consists of a black basalt mass (matrix) throughout which are disseminated innumerable semi-transparent little crystals of a variety of common felspar (orthoclase), and also many bright green granules of olivine. The lower part of its thickness is homogeneous,

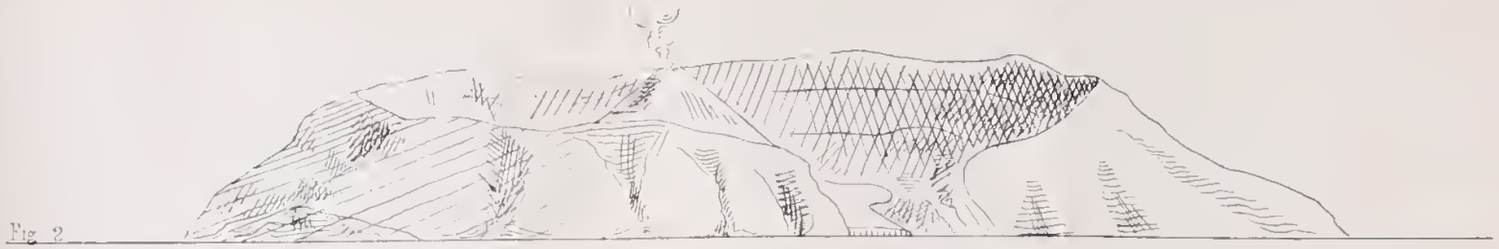

Fig. 2
From W N W

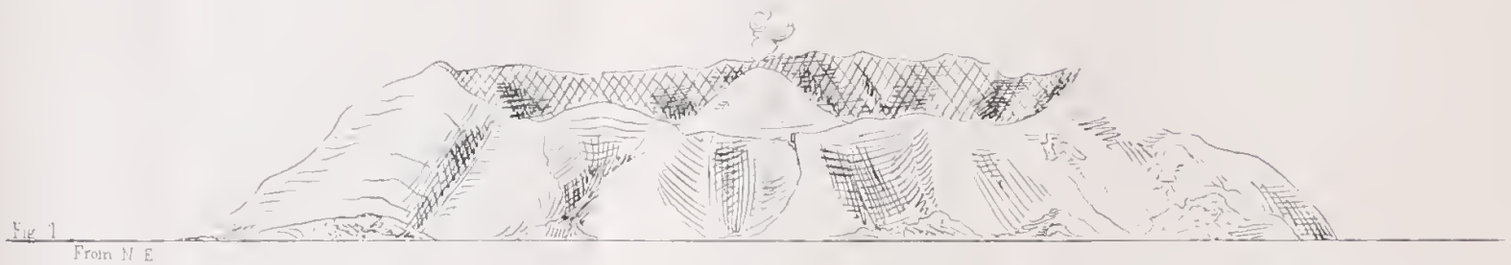

Fig. 1
From N E

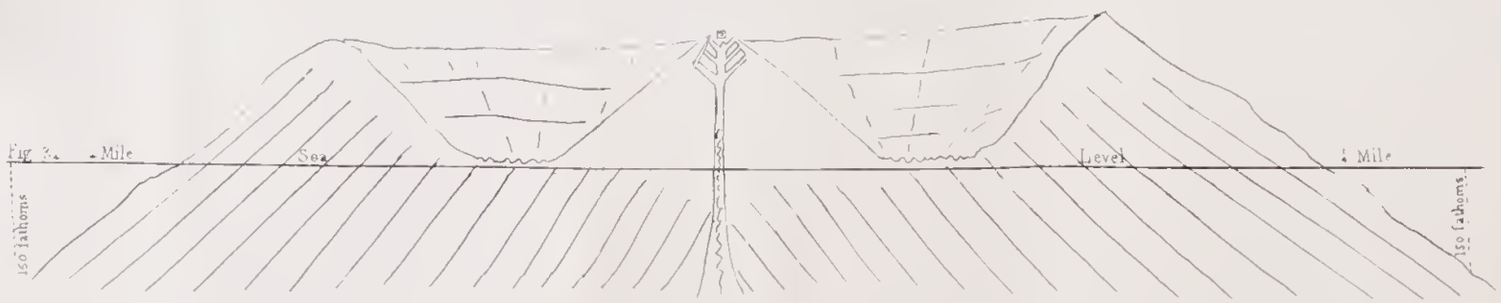

Fig. 3. 1 Mile

with a smooth fracture, but from the upper surface to a depth of several feet it is cleft in all directions, whereby the upper part is divided into rough blocks, possessing a spongy texture as well as countless sharp edges and corners.

The older lava, composing the rocks on the side of the valley and also the strata of the surrounding ridge is slighty different from this. The colour of its principal mass is a reddish grey, felspar and olivine crystals are embedded in it in the same proportions as before, and in addition small pieces of black augite of the granular kind, with conchoidal fracture. From underneath the black lava, where it terminates near the sea, issues a broad but thin sheet of hot water, mixing with the sea water between the pebbles of the beach. The Thermometer I had with me was not graduated high enough to measure its temperature, its highest mark being 104° F. (40° C.) The water where escaping from the rock must have been nearly at the boiling point, judging from the heat felt when the hands were dipped into it, or when the hot stones were touched. When bathing, we found the sea water warm for many yards from the entrance of the hot spring and to a depth of more than 8 feet. It is not impossible that a jet of hot steam or water may emerge from the rocks below the level of the sea. The hot water tasted quite fresh, and not saline as might have been expected, showing that it could not have been long in contact with the rocks.

We ascended to the base of the cone, passing along the sloping sides of the transverse valley through dry grass and brushwood or over sandy ridges, so long as the solidified stream of lava in the middle left us room to do so. At last we had to ascend the rugged surface of the black lava itself, and cross the circular valley, which has about the same breadth as the transverse valley (not quite one-eighth of a mile), until we arrived at the base about half a mile from the sea. The cone rises from the lava accumulated in the circular valley, and its base is about 50 feet higher than the level of the sea, at a rough estimate. It is quite round and smooth, and the inclination of its sides is 40 degrees. No vegetation of any kind was visible along its surface. We turned to the left and went up from the north side, where the appearance of a ravine, some way up, only two or three feet deep and very narrow with some tufts of grass growing along it, promised an

easier ascent for a part of the way, and where a rocky shoulder at about two-thirds of the height would offer a place to rest. Our ascent commenced at about 2½ P. M., and was certainly the most fatiguing expedition many of us remember ever to have undertaken. The sky was almost cloudless, and the heat consequently was great. The lower third and more of the slope consisted of a powder of ashes into which we sunk ankle-deep, and we often fell a step back for two gained. A little higher, stones loosening when the foot stepped on them and rolling down in long jumps, were dangerous to any one following.

Arrived at the rocks mentioned, their nature and the manner in which the side of the cone bulged out in their neighbourhood, showed that they marked the point from whence an effusion of lava of the same kind, as we has seen below, had taken place from the side of the cone, not reaching the mouth of the tube at the apex. The last third of the way from the rocks upwards offered a firmer footing, the ashes being cemented by sulphate of lime (gypsum) which, where it was present, formed the white patches we had already observed from a great distance when approaching the island. The ground now became very hot, not however intolerably so, until about 30 feet from the apex a few rocks again offered a convenient seat, not affected by the heat of the ground. There the Aneroid barometer and the temperature of the air were observed in the shade of an umbrella.

About half way between these rocks and the highest point cracks and fissures commenced to intersect the ground, widening higher up to the breadth of several inches, where clouds of hot watery vapour issued from them. They were filled with sulphur, often accompanied with beautifully crystallised white needles of gypsum, and a sulphurous smell also accompanied the vapour (sulphurous acid). This smell was however not very strong and did not prevent us from penetrating the clouds, when we discovered that what had appeared from below as the summit was in fact the edge of a small crater, about 90 or 100 feet wide, and 50 or 60 deep. At that depth it had a solid floor of decomposed lava or tufa and volcanic sand. Its walls were made up of rocks, in appearance like those of the older lava and were highest on the north and south sides. Towards the west the crater opened with a similar cleft, to that which had permitted us

to enter the island. The vapours rose principally from the northern and southern quarters of the edge where the fissures were largest and longest, running both parallel and across the edge. The rocks where the sulphurous vapours issued from between them, were covered with reddish and white crusts, indicating the beginning of decomposition of their substance. From the top the horizon and more or less of the sea were visible in all directions, with the exception of the quarter between South and West. The inner slope of the circular elevation enclosing the valley, had no spurs, but was like a plain wall, falling off with a steep descent all round towards the centre. It had a uniform brownish colour, appertaining either to the surface of larger masses of the rock itself, or being derived from the dry grass and smaller shrubs covering the slope. There were no trees or brushwood visible to correspond to the richer vegetation on the external circumference. Horizontal parallel lines, traceable throughout the circle and rising somewhat like the borders of receding steps, indicated the thickness and strike of the different sheets of lava and tufa which, superimposed upon one another, formed the substance of the circular elevation. A very good transverse section of it had already attracted my attention, where the left side of the transverse valley debouches into the sea. Several strata of tufaceous formation, alternating with older rock like lava, could be seen there rising from the rocky beach. One of the most remarkable amongst these was a stratum of rounded stones, like large pebbles, cemented by tufa, exactly like those of the present beach, but at a considerable elevation (about 20 feet) above the high water mark, showing that the sub-marine base of the Island must have been raised since those pebbles had been washed by the sea. All these strata dipped outwards from the centre of the island, parallel with the external slope of the encircling wall. It is interesting to observe that this slope continues under the sea level on three sides of the Island at least, at the same inclination as above water, which averages about 35°. This is shown by the soundings, which exceed 150 fathoms at a distance of a quarter of a mile from the shore.

Judging from what we saw, as I have here attempted to describe it, I would conclude that the circular valley and its walls constitute the crater of a huge volcanic cone of sub-marine basis, which had

been the vent for fluid masses of rock, when such eruptions took place on a larger scale than in more recent times. The smaller cone in the centre of the old crater, corresponding in its size to the diminished forces of volcanic action, is of recent origin, and represents those smaller cones of still active volcanoes which are usually distinguished as cones of eruption from the original cones, also called the cones of elevation.

We have it on record that about 60 years ago, the crater of the little cone was throwing out showers of red hot stones of several tons weight and enormous volumes of smoke (Captain Blair's account Asiatic Researches 1795), and but for the isolated position of the volcano preventing its more frequent observation, we should doubtless be able to fix the date of the eruption that left the stream of lava behind, which is now filling the valley and its outlet into the sea. Since that time it has entered the period of decline of volcanic activity, without however leaving us the assurance that it will not some day revive again.

From barometrical observations, I deduced the height of the cone by Gauss's formula, allowing for the time of the day and the influence of the hot ground near the summit, to be about 980 feet, from the level of the sea to the northern edge of the crater. This height is confirmed by a trigonometrical measurement of Lieutenant Heathcote, I. N., to whom I am indebted for the communication of his results. He visited the Island about four months earlier than we did, when he found the height of the cone 975 feet above the level of the sea, and the diameter of the Island 2,970 yards, 1.68 miles North and South.

The few notes I could glean respecting the recent history of the Island, are derived from the Island itself, from the records of the Asiatic Society, and from Horsburgh. We found on a rock in the transverse valley the inscription "Galathea 1846," showing that since then no alteration has taken place. The same conclusion can be extended farther back to the year 1831 or 1832, judging from an account communicated to the Asiatic Society (Asiatic Society's Journal, April 1832) by Dr. J. Adam, whose informant landed in the month of March, and reached the base of the cone. By this explicit account, the descriptions of the Island in "Lyell,"* dated 1843, and in Hum-

* Lyell's Principles of Geology.

boldt's *Cosmos*, both apparently derived from the same source, must be rectified. The narrator states (in "Lyell") that the sea filled the circular valley round the cone.

Horsburgh states that in 1803 the volcano was observed to explode regularly every 10 minutes, projecting each time a column of black smoke, perpendicularly, to a great height, "and in the night a fire of considerable size continued to burn on the east side of the crater, which was then in view."

The oldest account on record is that of Captain Blair, already quoted, taken from his Report of the survey of the Andaman Islands. He must have visited the Island about 1790, as far as I am able to conclude from the publication in the researches and the date of his chart of the Andamans which is 1790. He approached nearly to the base of the cone, which he describes as the lowest part of the Island, very little higher than the level of the sea, but he does not mention the black stream of lava. The acclivity of the cone he states to be 32° 17′, and its height 1,800 feet nearly, which, says he, is also the elevation of the other parts of the Island. On the other hand he remarks that the cone is visible in clear weather at a distance of twelve leagues, which would require a height of not more than from 900 to 1,000 feet. I think therefore that Captain Blair could have taken no accurate measurements, contenting himself with a rough estimate. If it could be proved otherwise, the Island would have subsided 820 feet since he visited it.

From the description in some of these accounts it would appear that the high vegetation which we found on the external slope of the Island, is of quite recent origin.

Mr. Adam's authority (1831) states as follows :—

"The summits to the N. E. were completely smooth and covered with ashes; those to the S. W., although partly covered with ashes, also have a good many small shrubs over them, with dry and parched grass growing on the surface."

He conjectures from this that the eruptions would take place only in the S. W. Monsoon or rainy season, at which time the S. W. wind would blow the dust and ashes on the hills in the opposite direction, or N. E.; such a conjecture is hardly admissible on the ground given, it being easier to account for the vegetation on the

south-western slope by its angle of descent being much smaller than that of the north-eastern slope.

The sulphur on the top of the cone occurs in such quantity in the cracks and fissures, often lining them to the thickness of more than half an inch, that the question naturally arises, whether the sulphur could not be worked with advantage.

Although in the immediate neighbourhood of the crater, where the fissures are numerous, the ground seems to be completely penetrated with sulphur, this is not so evident in other parts, only a few feet lower, where the surface is unbroken. There are however some reasons which seem to promise that a search might be successful. In eruptive cones, like that of Barren Island, there is always a central tube, or passage, connecting the vent in the crater with the heat of volcanic action in the interior. In this tube the sulphur, generally in combination with hydrogen, rises in company with the watery vapour, and is partly deposited in the fissures and interstices of the earth near the vent, the remainder escaping through the apertures.

If in the present case we admit the sensible heat of the ground of the upper third of the cone to be principally due to the condensation of steam, a process of which we have abundant evidence in the stream of hot water rushing out from underneath the cold lava, it is not improbable that the whole of the upper part of the interior of the cone is intersected with spaces and fissures filled with steam and sulphurous vapour, these being sufficiently near the surface to permit the heat to penetrate. It is therefore not unlikely that at a moderate depth we should find sulphur saturating the volcanic sand that covers the outside of the cone.

I only speak of the outside, as we may conclude from the evidence we have in the rocks of lava in the crater and those bulging out on the side, that the structure of the cone is supported by solid rock nearly to its summit, the ashes covering it only superficially.

From what has been said above, the probability of sulphur being found near the surface disposed in such a way as to allow of its being profitably exhausted, will depend on the following conditions:

First.—That the communication of the central canal, through which the vapours rise, with its outlets, be effected not through a few

large, but through many and smaller passages, distributed throughout the thickness of the upper part of the cone.

Second.—That some of these passages communicate with the loose cover of ashes and stones which envelopes the rocky support of the cone.

Although I have mentioned some facts which seem to indicate the existence of such favorable conditions, and which are moreover strengthened by an observation by Captain Campbell, who saw vapour issuing, and sulphur being deposited near a rocky shoulder about two-thirds of the height on the eastern descent of the cone, still their presence can only be ascertained satisfactorily by experimental digging.

The Solfatara at Puzuoli, near Naples, is a similar instance of the production of sulphur. It is a crater in which exhalations of watery vapour, sulphurous acid and hydrochloric acid take place, and where sulphur is also deposited. The sulphur is gained there by distilling it out of the sand of the crater, to a depth of 10 metres or 32 feet —it becomes too hot lower down—and returning the sand which after 25 or 30 years is again charged with sulphur. The permanency of the volcano of Barren Island as a source of sulphur would depend on the rapidity with which the sulphur would be replaced after the sand had been once exhausted. The time required for this is not necessarily fixed to periods of 25 or 30 years. In Iceland, at a similar spot, the sulphur is renewed every two or three years.

If a preliminary experiment should make it appear advantageous to work the cone regularly, the material about the apex, after being exhausted of the sulphur that is present, could by blasting and other operations be disposed in such a way as to direct the jets of vapour in the most convenient manner through uncharged portions of ground. If the sulphur should aggregate in periods of not too long duration, it would be possible to carry on the work of filling up new ground on one side, and taking away saturated earth on the other at the same time, so that after working round the whole circumference, the earth that had been first put on would be ready to be taken away.

If the periods should prove too long to allow the work permanently to be carried on, an interval of time might be allowed to pass, before resuming operations.

Water for the labourers could always be obtained from the warm spring at the entrance of the Island.

The distilling or melting of sulphur to separate it from adherent earth is a matter of comparatively little expense or trouble. If the sulphur be abundant, it might be effected as in Sicily by using a part of it as fuel. It is not necessary to do it on the spot; it might be done at any place where bricks and fuel are cheap.

It is impossible to predict certain and lasting success to an undertaking of this kind, all depending on the quantity of sulphur present and the rapidity with which it will be replaced.

The situation of Barren Island offers every facility for a preliminary trial. The near proximity of the Andamans insures a supply of convict labour, timber, bricks, and lime. All the wood and iron work required for facilitating the transport of loads up and down the hill could be made on the Andamans.

On certain Mediæval Apologues.—By E. B. Cowell, *M. A.*

Among the many by-paths of inquiry which open in every direction from the broad beaten track of literature, few are more inviting than those which trace the mutual likenesses between the household legends of different nations, now widely separated by lands and seas, but once linked in close association. Mr. Dasent, in his recent work on the Popular Norse Legends, has followed out most successfully one of these paths, and has traced the same stories under varying names and localities, from nation to nation of the great Indo-Germanic family,—showing that everywhere the natural literature which bursts spontaneously from the heart of the people, bears evidence of a common origin for its favourite legends, though now lost in a far distant past.

The present paper is not, however, concerned with those popular tales which float from mouth to mouth among the unlettered peasants,—its business is with certain apologues of a more philosophic character, which are yet common to the East and West, and which must have flowed from one identical source, though the particular channels by which the commerce of ancient thought was conducted,

are now no longer to be mapped out by the historian. Nor can we trace the course which any particular apologue took, as it found its way from land to land; too often it acts *per saltum* in its progress, and its intermediate history is concealed between its two appearances in two different epochs and countries. The stream rises to the surface in the far East and the far West, but its main current runs underground.

The first instance which I shall offer is one too well known to be dwelt upon at length, but it is one too remarkable to be wholly omitted in the present sketch,—I refer to the story of Abraham and the Fireworshipper, which Jeremy Taylor subjoined as a colophon to his Liberty of prophesying,* expressly adding that he found it "in old Jewish books." I am not aware, however, that it has ever yet been traced to the Rabbinical writings, and its spirit of toleration is widely different from the usual bigotry of the Talmud; and Bishop Heber has very plausibly suggested that Jeremy Taylor's memory deceived him and that he had really seen it as a quotation from Sádí's Bostán. It *is* thus quoted by Gentius in his preface to a translation of a Hebrew History of the Jews published at Amsterdam in 1651; and it is singular that it was added to the second edition of the 'Liberty of Prophesying' published in 1653—the first, published six years before, and therefore earlier than Gentius' work, not containing any allusion to it.†

Still any one who has seen the voluminous stores of mediæval Jewish writings, which fill the shelves of the Bodleian Library, cannot but feel a lingering suspicion that Taylor in his omnivorous reading may have met with the story as he states,—and that it may yet be found by the Rabbinical student in some mediæval Jewish book. Bishop Heber in his note remarks that a learned Jew, Mr. J. D'Allemand, professes to have a strong impression on his mind that he has seen it in a Jewish commentary on Genesis xviii. 1. It is a favourite story in the East,—it occurs in the Subhat ul Abrár of Jámí as well as the Bostán of Sádí,—and it may very probably be found in Arabic, whence the Rabbis may have derived it as they derived the

* It was here no doubt that Benjamin Franklin found it, though he borrowed it without acknowledgment.

† See Bishop Heber's edition of Jeremy Taylor's works, vol. i. note xx.

Ikhwán-us-Safá, of the Hebrew translation of which there are no less than three editions,—printed respectively in 1557, 1703 and 1713.*

The next of these legends to be noticed occurs in the 237th number of the Spectator, in a paper by Hughes, who gives it as an old Jewish tradition. I cannot however find any trace of Hughes' proficiency in Hebrew or Rabbinical lore, though he was a good classical scholar, and I am quite at a loss to trace the source from which he derived it. The story, as he relates it, describes an interview between Moses and the Supreme Being, respecting the apparent anomalies of Providence, and the discourse turns on an incident which takes place beside a stream at the mountain's foot. A soldier comes to drink, and, as he leaves, drops his purse, which is soon after picked up by a boy who passes by. An old man next totters up to the fountain and sits down to rest, when the soldier suddenly returns and accuses him of having his purse. An altercation ensues, and the soldier in his passion kills him. "Moses fell on his face with horror and amazement, when the divine voice thus prevented his expostulation: 'Be not surprised, Moses, nor ask why the Judge of the whole earth has suffered this thing to come to pass. The child is the occasion that the blood of the old man is spilt; but, know, that the old man, whom thou sawest, was the murderer of that child's father.' "

The story is particularly interesting to an English reader, as there can be no doubt that it must have given the first idea of 'the Hermit' to Parnell. Whether it occurs in any Hebrew work, I cannot say,—but the story wears on its face an oriental aspect. The only oriental book, however, where I remember to have seen it, is the Subhat ul Abrár of Jámi; and I subjoin the original with a translation. There are one or two singular variations between the two versions, and the oriental has the advantage in compactness of narrative.

حکایت †

گفت روزی بمناجات کلیم کای جهاندار خداوند کریم
بر دلم روزن حکمت بکشای عدل در صورت ظلم به نمای

* De Sacy, *Notices des MSS.* vol. ix. p. 406.

† Metre, — ∪ — — ∪ ∪ — — ∪∪ —

گفت تا نور یقینت نبود — قوّت دیدن اینت نبود
گفت یا رب بده آن نور مرا — مفگن از نور یقین دور مرا
گفت نزدیك فلان چشمه نشین — مي نگر قدرت مارا ز کمین
موسی آنجا شد و پنهان بنشست — منتظر پاي بدامان بنشست
دید کز راه سواري برسید — چون خضر رخت بسر چشمه کشید
جامه کند از تن وزد غوطه در آب — تن فرو شست و برآمد بشتاب
جامه پوشید و ره خانه گرفت — ره سوی منظر و کاشانه گرفت
بر زمین ماند ازو کیسهء زر — از دل سفله ز دنیا پر تر
پس ازان کودکي آمد از راه — جانب کیسه اش افتاد نگاه
از چپ و راست کسي را چو ندید — کیسه برداشت و سوي خانه دوید
بعد ازان دید که نابینائي — راه چشمه بعصا پیمائي
آمد و ساخت وضوئي به نیاز — بست بر یک طرف احرام نماز
ناگه آن کیسه فرامش کرده — خیر باد خرد و هش کرده
آمد و کیسه بجا باز نیافت — بهر پرسش بسوئي کور شتافت
کور با وے سخني گفت درشت — زد بران قهر کنان تیغي و کشت
موسی آن صورت هائل چو بدید — گفت کای تخت گهت عرش مجید
آن یکی کیسهٔ پر زر برده — وین دگر ضربت خنجر خورده
کیسه آن برد برین زخم چراست — پیش شرع وخرد این حکم خطاست
آمدش وحي که ای خرده شناس — کارها راست نیاید بقیاس
داشت آن کودک نورس پدري — مزدرا بهر کسان کار گري
در عمارت گرئي مرد سوار — کرد یك چند بمزدوري کار
مزد نگرفته بیفتاد و بمرد — مزد وے بود در ان کیسه که برد
کور مقتول ازین کوري پیش — ریخت خون پدر قاتل خویش
کشتش امروز پسر بهر قصاص — وز پدر روز جزا داد خلاص

One day spake Moses in his secret converse with God,
" Oh thou all-merciful Lord of the world,
Open a window of wisdom to my heart,
Shew me thy justice under its guise of wrong."
God answered, " While the light of truth is not in thee,
Thou hast no power to behold the mystery."

Then Moses prayed, " O God, give me that light,
Leave me not exiled far away from truth's beams."
" Then take thou thy station near yonder fountain,
And watch there, as from ambush, the counsels of my power."
Thither went the prophet, and sat him down concealed,
He drew his foot beneath his garment, and waited what would be.
Lo from the road there came a horseman,
Who stopped like the prophet Khizr by the fountain.
He stripped off his clothes and plunged into the stream,
He bathed and came in haste from the water.
He put on his clothes and pursued his journey,
Wending his way to mansion and gardens;
But he left behind on the ground a purse of gold,
Filled fuller with lucre than a miser's heart.
And after him a stripling came by the road,
And his eye, as he passed, fell on the purse;
He glanced to right and to left, but none was in sight;
And he snatched it up and hastened to his home.
Then again the prophet looked, and lo! a blind old man
Who tottered to the fountain, leaning on his staff.
He stopped by its edge and performed his needful ablutions,
And pilgrim-like bound on him the sacred robe of prayer.
Suddenly came up he who had left the purse,
And left with it his wits and his senses too,
—Up he came, and, when he found not the purse he sought,
He hastened to make question of the blind old man.
The old man answered in rude speech to the questioner, [him.
And in passion the horseman struck him with his sword and slew
When the prophet beheld this dreadful scene,
He cried, " Oh thou whose throne is highest heaven,
It was one man who stole the purse of gold,
And another who bears the blow of the sword.
Why to that the purse and to this the wound?
This award, methinks, is wrong in the eye of reason or law."
Then came the Divine Voice, " Oh thou censurer of my ways,
Square not these doings of mine with thy rule?
That young boy had once a father

Who worked for hire and so gained his bread ;
He wrought for that horseman and built him his house,
Long he wrought in that house for hire,
But ere he received his due, he fell down and died,
And in that purse was the hire, which the youth carried away.
Again, that blind old man in his young days of sight
Had spilt the blood of his murderer's father ;
The son by the law of retaliation slays him to-day,
And gives him release from the price of blood in the day of retribution !"

In neither of the foregoing apologues have we been able to trace a Rabbinical origin, though there are grounds for believing that both originally may have come from a Jewish source ; but in the next story, I have lately discovered the original Jewish version, which affords a strong presumption that a more careful search might identify the others too. The subject in itself may seem of small import,—but it is not of small import to trace the progress of ideas among nations ; and each of these apologues has a professed philosophical aim. They are not mere fables, whose marvels serve only to excite amusement or wonder,—they are myths, like those in Plato, with an intended meaning, and they passed current from the thinkers of one nation to those of another because they came home to all with a certain reality and power of their own. At the same time, if we could trace a Jewish origin to all the three, it would be a new and interesting proof of the wide influence which the mediæval Jewish mind exercised upon its contemporaries, in spite of the contempt and persecution which universally strove to keep it down.

This next apologue is one which, I believe, was given by Voltaire, but I have not verified the passage in his works. It has been more than once copied from him, as for instance by Lord Byron in the notes to one of his poems.

The Persian version is found in the first book of the Masnavi of Jaláluddín Rúmí, who died A. D. 1272 (A. H. 671.) To understand the story aright, we must remember the oriental notions of Solomon's power over the elements and the genii.

One simple of heart came in the morning
Running into Solomon's judgment-hall,

His face pale with terror and both his lips blue,
And Solomon said to him, " O friend, what meaneth this ?"
He answered, " The angel 'Izráíl
Hath just thrown on me a glance full of wrath and hatred."
" Ask," said the king, " what boon thou desirest."
" Oh thou refuge of the heart, command the wind
That it bear me from hence to Hindustán,
It may be that there I may save my life."
Then Solomon gave to the wind its mission
And it bore the man away to Somnáth.—
Thus too thou may'st see men flying from poverty,
They are swallowed as victims by desire and hope,
That fear of theirs is but like his in the story,
And desire and its greed is *their* Hindustán !—
He commanded the wind that forthwith in haste
It should bear him to Hindustán across the sea.
The next day at the time of audience
King Solomon spake unto 'Izráíl,
" Thou looked'st with wrath on a true believer,—
Tell me wherefore, oh messenger of the Lord.
'Twas a strange action, methinks, this of thine,
To frighten him an exile from house and home."
He answered, " Oh thou King of an unsetting empire,
His fancy interpreted my action wrong.
How should I have looked with anger on such as him ?
I but cast a glance of wonder as I passed him in the road,
For God had commanded me that very day
To seize his soul in Hindustán.
I saw him here and greatly did I marvel,
And I lost myself in a maze of wonder.
I said in my heart, Though he had an hundred wings
He could never fly from hence to Hindustán in a day.
But when I arrived, as God commanded,
I found him there before me and took his soul."

Few Oriental Apologues have a more striking outline than the above, rising almost to the moral sublime ; but it is only one of the many fine legends and fables which are scattered throughout the

Masnavi. It is in fact this simplicity and power which distinguish the apologues of Jaláluddín from most of those which we find in Jámí or Faríduddín 'attár;—the latter are generally *only* stories, graceful enough in their way, but seldom striking any deeper chord. The legend itself is found in al Beidáwi's Commentary on the Koran, *sur.* 31.; *v.* 34.;* and the following, from the Talmud, is undoubtedly an earlier and cruder version of the same story. It is immeasurably poorer in every respect, but the scene and dramatis personæ are identical. (See Dr. Lightfoot's *Horæ Talmudicæ*, vol. ii. p. 428, who quotes it from the treatise Succah, fol. 53. 1.)

"Those two men of Cush that stood before Solomon, Elihoreph and Ahijah the scribes, sons of Shausha. On a certain day Solomon saw the Angel of death weeping; he said, Why weepest thou? He answered, Because these two Cushites entreat me, that they may continue here. Solomon delivered them over to the devil, who brought them to the borders of Luz; and when they were come to the borders of Luz, they died."

Dr. Lightfoot adds the following from the ancient Gloss. "He calls them Cushites† [*ironically*], because they were very beautiful. They 'entreat me that they may continue here.' For the time of their death was now come; but the angel of death could not take their souls away, because it had been decreed, that they should not die but at the gates of Luz. Solomon, therefore, delivered them over to the devils; for he reigned over the devils, as it is written, And Solomon sat upon the throne of the Lord, for he reigned over those things that are above and those things that are below."

I may mention in conclusion, as a fourth instance (though in a somewhat different style), the story of the Santon Barsisa, in the Guardian, No. 148. Steele avowedly takes it from the once popular "Turkish tales;" but the original is probably to be found in the fifth majlis of Sádí, and it is singular that even here we can trace some apparent signs of a Jewish source, as the tale opens with the words, اورده اند که در بنی اسرائل زاهدی بود نام او برصیصا "They have related that among *the children of Israel* there was a Záhid named Barsísá."

* I may add that Parnell has taken part of his Hermit from the legend in *sur.* 18.

† Scil. Ethiopians, or negroes.

Two Letters on Indian Inscriptions.—By Fitz E. Hall, *M. A.*

[We have received the following letters from Mr. Hall, in America; —they were enclosed in a letter, dated Troy, New York, Nov. 17th, 1859.—Eds.]

Calcutta, April 22nd, 1859.

To the Secretary, Asiatic Society of Bengal.

Sir,—My agent in this place has instructions to make over to you, in my name, an inscription-stone, now on its way hither from Benares. This monument I wish to present to the Museum of our Society. It was found among the ruins of Pátan, a decayed city near Rátgurh in the Saugor District.

The inscription, as you will see, is well-nigh effaced. With some distrust, I read the beginning of it as follows:

सिद्धिः । संवत् १११५ वर्षे फाल्गुनवदि ८ गुरा ।
मदपतितकपोलः कान्तदान्तः कपाल-
स्थितततिमिरजालः सच्चलत्कर्णतालः ।
कुलिशकठिनशुण्डादण्डराजन् मनोवि-
घ्नकदलनकरालः पातु वः शम्भुबालः ॥

'Auspiciousness! Year of *Samvat*, 1115: Thursday, the 8th *day* of the dark fortnight of *Phálguna.*

'May S'amblu's son—with exudation falling on his cheeks, with brilliant tusks, protector of the earth, checker of all darkness, waving his ears, adorned with a mace-like proboscis, obdurate as adamant, potent in removing mental impediments—protect you!'

All the rest is abundantly doubtful. Even the little that I have decyphered of it may, therefore, admit of correction. According to my reading, there was a Bráhman in the west, apparently a royal personage, by name Kandukádripa, of the Vásala (?) *gotra* and Udgara *anwaya;* and among his ascendants was one Ráma. Kandukádripa's wife was called Sávitrí; and this pair had issue two sons, Purukárva (Purukárya?) and Mahodadhi; and a daughter Lakshmí.

Another family is afterwards spoken of. There was a Bráhman named Bhíma, of the S'ándilya *gotra* and Udgara *anwaya*. He had a brother Vásudeva and a sister Lakshmí. Her one Vámana seems to have married: but I have failed to ascertain who he was, as likewise the purport of all that ensues of the inscription.

The year 1115 of the *Samvat* era corresponds to A. D. 1058.

To the Secretary, Asiatic Society of Bengal.

Sir,—I have the honor to present to our Society, on behalf of Major R. R. W. Ellis, a copper-plate land-grant, dated in the year of Vikramáditya answering to A. D. 1097. The donor informs me that this record was "discovered, six years ago, by the *Jágírdár* of Kotí, in removing some ruins in a fort, Raipur, near Soháwal, an ancient city four *kos* east from Nágod."

This grant is the first of the two which I have translated in our Journal for last year, (Vol. XXVII. pp. 217, 250). On recent reference to the original, I find that, at p. 221, l. 6 *ab infra*, I should have read श्रीमन्म हाराज- in place of श्रीमद्राजाधिराज-. But the change of sense entailed by this correction is only very immaterial. In my rendering of a passage a little higher up the same page, perhaps it would have been preferable to restrict समाज्ञापयति to पणेसरमौ अ० &c., बोधयति to निखिल० &c., and आदिशति to राजराज्ञी० &c.

Calcutta, Maundy Thursday, 1859.

Memorandum on the Survey of Kashmir in progress under Captain T. G. MONTGOMERIE, *Bengal Engineers, F. R. G. S. and the Topographical Map of the Valley and surrounding Mountains, with chart of the Triangulation of the same executed in the Field Office and under the Superintendence of Lt.-Colonel* A. SCOTT WAUGH, *F. R. S. F. R. G. S. Surveyor General of India, Dehra Dhoon, May* 1859. *Read at a Meeting of the Asiatic Society on the 6th of July,* 1859. *By Major* H. L. THUILLIER, *F. R. G. S. Deputy Surveyor General of India.*

In No. 263 of the Asiatic Journal for 1857 a paper was published by Lieutenant (now Captain) Montgomerie of the Bengal Engineers, 1st Assistant Great Trigonometrical Survey of India on the height of the Nanga Parbut and other snowy mountains of the Himalaya range adjacent to Kashmir; and it was therein stated that although not equal to Mount Everest (29,002 feet) still the Nanga Parbut (26,629 feet) was as much the king of the Northern Himalayas as Mount Everest is the king of the Southern Himalaya. I have now the satisfaction, through the kind consideration of my friend Colonel Waugh, of laying before the Society, the actual results of the progress of this magnificent and unparalleled survey, up to a very recent date, and the maps now presented to the view of the meeting, together with the few details I am about to read, will prove better than anything else, the value and the character of the great national work which the Surveyor General of India is now rapidly carrying out to completion—a work which I believe will bear a comparison with any geographical operation undertaken in any country with which we are acquainted.

As the operations proceed, the labours of the Surveyors are rewarded with discoveries which certainly of late years have been but of infrequent occurrence. Another stupendous mountain has been measured and fixed by Captain Montgomerie, which perhaps is second in the world only to the one above alluded to, viz. Mount Everest, as measured by Col. Waugh in 1847. A snowy peak very nearly in the ray of Skardo from Sirinagur and distant N. E. about one hundred and fifty-eight miles from that capital, on the Kara Koram

range, termed for the present K. 2, proves to be 28,278 feet above the sea level, which is 122 higher than Kanchinginga, but 724 feet lower than Mount Everest. It is impossible to say therefore what the exploration of the interesting ground in the Northern Himalayas now under survey may bring forth. The project in hand of bringing all this difficult and hitherto comparatively unknown tract of country under minute and accurate survey is a grand one. For the eastern portion already achieved, and represented by maps in the form of degree sheets on the quarter inch scale, manuscript specimens of which are laid on the table, together with one sheet No. 47 of the engraved Atlas of India, containing a portion of the same survey, Colonel Waugh has been rewarded by the Royal Geographical Society with their gold medal in 1857; and when the whole of the Himalayas from British Gurhwal to the Indus is completed, it will form a noble memorial of the undaunted skill and energy of the officer who planned, and his subordinates who executed it.

This valuable map and beautiful specimen of Topographical Drawing now exhibited in manuscript, measuring 4 ft. 1 in. × 4 ft. 1 in. embraced between the meridians of 74° to 75° 40′ East Longitude and the parallels of 33° 20′ to 34° 44′ North Latitude, has been compiled, on the scale of *half an inch* to the mile, from the Field work of the Trigonometrical and Topographical parties, under the immediate superintendence of Captain T. G. Montgomerie, Bengal Engineers, 1st Asst. G. T. Survey of India. It embraces eight thousand and one hundred square miles of country including the lovely valley and surrounding mountains of the romantic country of Kashmir, with no less than four thousand six hundred and six villages, depending on three hundred and fifty-two trigonometrical points, and gives the computed positions of the principal towns, mountains, &c. with all the topograghical details, viz.: the villages, roads, passes, lakes, ridges, slopes of mountains, &c.

This is the original scale on which the survey has been projected, a reduction to the usual geographical scale of *quarter inch* to the mile is being likewise made and this will be incorporated into the Indian Atlas and engraved like the other sheets.

The compilation of the Map has been executed by Mr. W. H. Scott, the able Chief Draftsman at the Surveyor General's Head Quarters,

under the immediate inspection and guidance of Colonel Waugh; and the drawing and printing which will bear close examination is due to Mr. Scott and Sheikh Gholam Kadar, native draftsman, the hills in brush work (Indian ink) being copied from the original plane table sheets or sections executed on the ground by the officers of the Survey. The skeleton chart of triangles shews the basis of the work on which the topographical map has been compiled, and is interesting as illustrating the rigorous and minute method with which every thing is conducted in the Department.

Captain Montgomerie in his report gives the following description of the country under survey.

"Kashmir is a large valley lying between two snowy spurs of the great Himalayan range drained by the 'Vedasta' or 'Jhelum' river which with its tributaries is navigable by large boats for about ninety miles. The greatest length of the valley from ridge to ridge measured from south-east to north-west, which is also the direction of the drainage, is about one hundred and eighteen miles. The flat portion is about eighty-nine miles long with an average breadth of sixteen and three quarter miles, and elevated about 5,200 feet above the sea.

"The flat ground consists of an upper, lower and level, the former separated from the latter by cliffs of clay, coloured with burnt sienna, called 'kharewah' by the Kashmiris and forming a distinguishing feature on the map, some 200 to 300 feet in height.

"The upper or table land is often found standing in isolated masses,* but is generally connected with the foot of the hills. Most of the upper level was formerly irrigated, but is now generally fallow and dry.

"The lower level is subject to inundation, and indeed the portion between the city and great lake, still forms one vast marsh, but vaguely separated from the lake itself.

"The slopes of the hills between the flat ground and the limit of forest are a mixture of cultivation, good grazing grounds and forests of cedars, pines, firs, &c.; the forests preponderating.

"The number of lakes in the valley, and of tarns in the mountains form a distinctive feature in Himalayan Geography, as they are but rarely met with on the Hindustan side of the Himalayan range."

* Several miles in length and breadth.

The chief features in the valley are the Lakes which are of world-wide celebrity. These overflow the country and give it the marshy character so delicately depicted on the map before us.

The "Great Wulur" lake, the largest in the valley, is about twenty-one miles north-west of the city of Sirinagar, the capital. Its extreme breadth north and south is ten and a half miles; this does not include the marshes on the south side, and which continue past the parallel of the city. The extreme breadth a little north of the Island of Lunka is ten miles and the circumference nearly thirty miles.

During a storm the waters lash themselves into high waves, so that no boat will venture on it. The waters find their way out of the valley by the Burrumulla pass, dashing in a most fearful torrent through the mountains and at last meet the Jhelum river about one hundred miles above the town of that name. About half way up the mountains surrounding this lake a perfectly level water mark is to be seen running along them, which would seem to corroborate the belief of the natives that the valley was once a large lake.

The "Manus Bal" lake is twelve and a half miles from Sirinagur and in the same direction as the Wulur lake. Its length is two miles east and west, and breadth seven-tenths of a mile.

The hill of "Aha Tung" 6290 feet, bounds the southern face of this lake and is remarkable, owing to its isolated position and abrupt rise from the level of the surrounding country of 1000 feet.

The "Anchar" can scarcely be called a lake, it is caused by the waters of the Sind river, overflowing the low ground north of the city.

The lake immediately east of the city supplied by the Arrah river, boasts of the far famed Isle of Chinars (Chinar or Platinus Orientalis though considered an exotic thrives luxuriantly in the valley). The gardens and groves of poplars, cherries, walnut, peach, apricot, apples and mulberries along its bank, add considerably to the beauty of this lake.

All over the valley very interesting ruins are found, some near the Island of Lunka are entirely under water, whether these have been submerged from the ground sinking or owing to the water rising above its original level it is difficult to say.

The east end of the valley consists entirely of rice-fields. At the west part there is little or no cultivation, being very woody. Culti-

vation is carried on in the small valleys that run into the mountains, viz. the Daras valley, Teregram, Hurripore and Tevil (near Wurtapore). These are the prettiest spots, the east end is scarcely worth a journey to see it.

The Great Wulur Lake is a favorite resort of sportsmen in search of rare aquatic birds. The lake also abounds with fish of all sizes peculiar to hill waters, the larger kinds being speared or harpooned from small boats.

The river Jhelum is navigable from the city to the great lake, and indeed most of the marshes and lakes can be crossed in boats, so that sportsmen and travellers in search of the beautiful or romantic can be easily gratified.

Ibex, Bara-singha or Elk, brown and black Bears, Musk-deer and Gazelle are found on most of the higher ranges, but it needs a keen sportsman both willing and able to endure fatigue and hardship, to boast of having shot an Ibex. Many are the thrilling incidents of a chase after Ibex, over fearful precipices and slippery glaciers, where a single false step would have sealed the fate of the daring hunter.

The grandeur and beauty of Kashmirian scenery cannot be described, it must be seen to be fully understood or appreciated. The high masses of mountains, many covered with snow, which surround the valley on every side, the lakes and streams, the variety and luxuriance of the foliage and the mildness of the climate are together not to be met with in any other part of India.

The town of Kashmir or Sirinagur is quite an Eastern Venice, the place being intersected with canals in every direction and the houses built out from the water. The lake adjoining, with its pretty little island of Chinars, and its numberless floating gardens, is like a mirror reflecting the surrounding mountains on its surface, so as quite to give the idea when passing over in a boat that one is skimming over the peaks and crags in an aerial machine. At the bottom of these mountains on the borders of the lake are the famous gardens of Shalimar and Nishat. Streams from the mountains, are made to run through them, forming Cascades and canals, the Chinar trees casting their shade over them and the walks lining the sides.

The houses in the city of Sirinagur are chiefly of brick-work, built

up in frames of wood. The walls seldom exceed a single brick in thickness, so that but for the wooden frame work, these habitations would not be very safe. Sirinagur, like all Indian cities, is exceedingly dirty, and the inhabitants, except the shawl and wool merchants, vie with each other in uncleanliness.

The bridges over the Jhelum, shewn on the map opposite Sirinagur, are entirely constructed of logs of wood heaped up cross wise, which serve as piers, over which a platform is laid of planks and beams roughly nailed or tied together, the spaces between the piles of wood being left open and of such width, as to allow of the passage of the boats on the river.

The garden houses and dhurrumsallas in the suburbs of the city are chiefly used by visitors.

"The mountains around Kashmir" Capt. Montgomerie observes, "are covered with snow for at least eight months in the year, many being from 15,000 to nearly 18,000 feet above the sea, include large glaciers between their spurs, and retain the snow throughout the year.

The chief peculiarities of the survey operations arise from this great elevation. Special arrangements were required for the protection of the natives and for the necessary supplies of food and wood, when the surveyors were working far above villages and even above the forest itself.

"The triangulation depends upon the Kashmir Series of the Great Trigonometrical Survey, which emanates from a side of the North-West Longitudinal Series in low hills near Sealkote.

"In order to connect the triangulation in the Punjab with Kashmir, it was necessary to carry it across the Chatadhar and Pir Punjal snowy ridges. This was done by taking observations from the tops of the snowy peaks best adapted to form a series of symmetrical polygons and quadrilaterals. In this way the triangulation has been carried on systematically from the foundation. It consists of one main axis, viz. the principal triangulation, which is composed of polygons and quadrilaterals. From this axis, diverge numerous minor Series of triangles, which starting from one side of the principal Series are tested by closing on another side of the same, or upon a side of the North-west Himalaya Series.

"From these minor series, secondary stations have been fixed, so as to cover the whole country with tested trigonometrical points.

"Though the country to be surveyed was so elevated, the rigorous rules of the G. T. Survey of India were adhered to throughout.

"The highest points suited to the triangulation were always occupied and observations were taken from stations upwards of 16,000 feet above the sea.

"On the principal series of triangles the observations were invariably made to luminous signals, viz. Heliotropes and Reverberatory lamps on the Argand principle with parabolic reflectors, notwithstanding the physical difficulties and the severity of the climate on the snowy peaks, so especially trying to the natives of India who served the signals.

"Numerous observations being required, it was necessary to reside on the peaks for at least two days and nights, generally more.

"Some of the peaks below 14,000 feet lose the greater part of their snow by September, but practically it was necessary to observe most of the stations earlier in the season, when the snow was still heavy at 11,000 feet, and occasionally in consequence of clouds and storms, the party had to remain pitched on the snow for upwards of a week at a time."

Colonel Waugh thus speaks on this point:—

"The physical difficulties imposed by the nature of the country and survey arising from the necessity of ascending and encamping on snowy mountains of great elevation were very great. The character of a Trigonometrical survey demands that the stations shall be fixed on the highest summits, or on points commanding extensive views and the system of the department, requires that an adequate number of good observations shall be taken, which usually occupies several days. To accomplish this task, not only the observers, but the signal men (natives) must encamp at or near the stations. The heights of the snowy peaks, ascertained on the Punjal range were 'Moolee' 14,952 G. T. Survey and Ahertatopa 13,042 G. T. Survey and to the north of Kashmir Hara Mook 16,015 feet. Amongst the highest elevations visited in Thibet were the principal stations of Shimshak 18,417 and Shunika 18,224 feet. The difficulty of obtaining supplies and firewood at such elevations may be imagined, yet

they were every-day occurrences. Out of sixteen principal stations in Thibet fourteen exceed 15,000 feet in height. Great as the hardships entailed on the European officers undoubtedly were, they were slight compared with those endured by the native establishment, with the utmost cheerfulness. The signallers and headmen were mostly natives of Hindustan to whom extreme cold is a condition of positive suffering, yet these men were loyal and contented as they have been in all survey parties over India during the mutiny."

Capt. Montgomerie states "On the Pir Punjal peaks the electricity was so troublesome even when there was no storm, that it was found necessary to carry a portable lightning conductor for the protection of the Theodolite.

"Space sufficient even for the very small camp could never be got quite close to the stations on the peaks. During the day this did not matter, but at night, though the distance might not be more than two hundred yards, it was rather a difficult matter to get back from the Observatory tent after the Surveyor had finished taking observations to the lamps. Soon after sunset, the surface of the snow becomes as slippery as glass, affording by no means a satisfactory footing on a narrow ridge with either a precipitous slope, or a precipice on either side.

"The country was found too difficult to admit of the transport of a twenty-four inch theodolite without great delay and expense. Capt. Montgomerie was therefore directed to take the principal observations with a *fourteen-inch* theodolite, a first rate instrument made by Troughton and Simms which gave every satisfaction.

"On the Secondary Series or Minor Triangulation, the ground covered by which is shewn by shade on the chart, twelve, eight and seven-inch Theodolites were used, according to circumstances.

"By means of the principal and secondary triangulations the whole country was covered with Trigonometrical points at an average distance of little more than four miles from each other."

During the first two seasons of the Kashmir Series, no less than sixteen thousand square miles of close triangulation have been executed, i. e. an area of more than half of Scotland has been covered with trigonometrical points and thirty-two thousand square miles of topographical drawing were sent in, giving all the details of the country.

Besides these, numerous valuable sketches, routes, heights of passes, &c. have been added to the survey.

The numerous observations taken to the great Snowy mountain "Nanga Parbut" or "Dayarmur" in latitude 35° 14′ 21″ and longitude 74° 37′ 52″ prove that its mean height is 26,629 feet above the sea. No peak within sixty miles on any side of the general map of the Nanga Parbut comes within 9,000 feet of the same height. This pinnacle of the Himalayas is the highest point in the range between Nepal and Attock. In consequence of its isolation from all peaks of anything like an equal altitude, it naturally forms a noble object in whatever aspect it is viewed.

"The topographical detail was all sketched in the field on Plane Tables, according to the system laid down in Colonel Waugh's pamphlet of instructions on Topographical Surveying, an arduous task in such an elevated country, as it was of course necessary to visit numerous peaks and places on the ridge, in addition to the Trigonometrical stations which include the highest peak in the Pir Punjal.

"The drawing of the Field Sections expresses the ground well, that of Captains P. Lumsden, Bengal Army and Godwin Austen, H. M. Army being more specially artistic.

"The advantage of this system in a country like India, especially in the hilly and mountainous tracts, is that officers with a moderate previous knowledge of military drawing, can be readily trained to fill up the triangles and the work proceeds rapidly, producing a complete and valuable map with the topographical features accurately delineated at small expense."

But the difficulty of sketching ground of such a character may be imagined. To do so with any degree of faithfulness requires a peculiar talent, and is a gift as much as copying the human face. Stevenson, the Civil Engineer, in his evidence before Parliament on the Ordnance Survey of England stated his belief, that there were not above eight persons in England who understood how to pourtray *ground*. If difficult therefore in England, it must be still more so where the relative commands are so immense.

Colonel Waugh proceeds to observe—

"In consequence of the difficulty in obtaining Topographical Assistants Officers of the Quarter Master General's Department were at

first employed on the topography, but they were soon called away by the demands of their own department; consequently a fresh set had to be trained, involving delay and expense, which would have been avoided, if the same assistants could have been employed throughout.

"Lieut. Basevi of the Engineers made a very careful reconnoissance of many of the passes on the Pir Punjal, determined their heights, and drew up an able report of their capabilities; he also sketched a portion of the ground near the ridge, and subsequently reported on the river Vedusta or Jhelum. Lieutenant Basevi is a most energetic talented and able officer and did excellent service, as also did Mr. Bell, who is an able Surveyor.

"Captains P. Lumsden, Allgood, and Johnson, took up their work *con amore*, quickly acquired the requisite knowledge of the system, and their zeal in this arduous and harassing work deserves high praise. They completed three thousand and two hundred square miles on the half inch scale, and the Surveyor General having personally examined their plans, speaks in the highest terms of the same.

"Captain Godwin Austen exhibited special talent for the delineation of ground, and Lieut. Melville's work was very good. Both of these officers proved themselves indefatigable mountaineers and have altogether exhibited so much zeal as to be deserving of high commendation. Lieut. Murray also did good service, and proved himself a useful Surveyor.

"The success attending this season's work, the admirable manner in which Captain Austen and Lieuts. Melville and Murray acquitted themselves, induced the Surveyor General to apply to Government for five additional qualified officers, to which sanction was accorded by Government, but he has not been yet able to find any suitable persons. A great deal of floating talent does exist in the army, and qualified young officers are frequently to be met with, but the military operations consequent on the mutiny have absorbed most of the valuable officers and rendered selection difficult.

"Lieut. Elliot Brownlow of Engineers, an officer of the highest promise and beloved by all his contemporaries, volunteered for service and joined at Delhi, in eight days from Kashmir, though too late for the assault; he then proceeded to Agra and Lucknow with the Engineer's Brigade, and was most lamentably killed at Lucknow after the

siege by an explosion of gunpowder. The mountain survey thus lost a most energetic and valuable member, unrivalled in physical power, endurance and cheerfulness under fatigue, whilst the Engineer Corps lost a talented and amiable officer.

"Poor Elliot Brownlow's adventures and achievements in the snowy mountains and his hardihood and endurance have been the theme of much praise and admiration amongst his brother Surveyors. He had intended to devote his rare and splendid qualities as a mountain surveyor, had he survived, to the exploration of Central Asia on rigorous principles.

"The merits of the various assistants have been duly reported on. By means of their zealous co-operation alone, was the Surveyor able to finish this difficult piece of work. Though they have had much to contend with in such a country, besides the extremes of heat and cold, their exertions have been most praiseworthy.

"The native establishment has from the commencement consisted of a mixture of men from the plains and from the hills. They were all not a little troubled by the impossibility of boiling or rather softening their rice, dal, &c. at such high elevations. Notwithstanding that, and the general severity of the climate, they have at all times done their work carefully and efficiently.

"There were many difficulties peculiar to surveying in a partially independent state. The natives of the country moreover had prejudices against going up some of the high hills; but the clouds, mist and haze were always by far the worst enemies of the Surveyors.

"During the last year the party were troubled first by cholera and secondly by a flood. The former had stuck to the valley strange to say throughout the winter when the snow was up to a man's neck. The camp did not suffer much as it was taken up to the high Table Land. During the flood they had to take to the boats; about thirty miles by ten to fifteen were submerged.

"In the after part of the season the triangulation of Little Thibet was finished and a good piece of Ladak, all on the other side of the Himalayas, where the rains did not interfere so much, though the clouds were troublesome.

"The Latitude and Longitude of Skardo have been obtained, but, Leh, has not been laid down yet, though two peaks in its neighbourhood

have been fixed. It is supposed *Leh* will prove considerably to the west of the old position.

"The triangulation was commenced in 1855, and finished in 1856, with, on an average, three Assistants each year.

"The topographical work was taken up in 1856 and completed in 1857 with on an average, four Assistants each year."

The cost of the entire survey has been only Rs. 4-5-2 per square mile, or say about 8 shillings and 8 pence, a sum believed to be trifling in comparison with the immense advantage gained, and exceedingly moderate when contrasted with similar or easier work in other countries.

The able and successful manner in which Captain Montgomerie with the aid of this small party during his first season accomplished the arduous task allotted to him has been described in full in a previous printed Report of the Survey Operations for 1855-56, and the meritorious services of the Captain and his party obtained the acknowledgments of the Right Hon'ble the Governor General in Council. The Surveyor General of India bears his professional testimony to the fact that the measure of success attained is highly honorable to Captain Montgomerie and all members of the party engaged in the work. Colonel Waugh thus expresses himself; "Considering the stupendous physical difficulties presented by the nature of the country to regular and systematic surveying, the quantity and quality of the work performed, the ability displayed in command of an unusually large party, the quantity of instructions which had to be imparted to so many new hands, the judicious character of his general arrangements combined with minute attention to the smallest details, as well as the prudent policy of his relations with the Maharajah and the people of the country—all the above marks Captain Montogomerie as an officer of no ordinary stamp." The exertions of the party are, in the Surveyor General's opinion, well deserving of commendation and he particularly solicits that the thanks of the Government may be accorded to Captain Montgomerie, and that the services of Mr. Johnson who has been with the party from the commencement may be noticed favorably as well as those of Messrs. G. Shelverton, W. Beverley and Mr. W. H. Scott, the able Chief Draftsman of the Field Office in connection with the compilation of the map.

But neither the physical character of the country nor the constant task of training new hands formed the chief difficulty of a Survey conducted in a foreign territory, and which at no time could be expected to be agreeable to the ruler, his officials and people. To them the influx of a considerable body of Surveyors spread over the country, however orderly and well-conducted, must bear the aspect of an intrusion. The tact, delicacy and ability with which Capt. Montgomerie maintained amicable relations with the Court, a most difficult one to deal with, and preserved discipline in a large mixed establishment, is deserving of the highest praise, and stamps him as an officer of great policy and judgment.

"His difficulties were much enhanced by the military rebellion of 1857, during the whole of which excited period the party continued its peaceful labours without cessation and with only one serious interruption.

"With the old Maharajah Golab Singh, Capt. Montgomerie was on the most friendly terms and the estimation in which he is held by Maharajah Rumbeer Singh, can best be estimated from the acknowledgments which his Highness made to the Captain in Durbar, on the resumption of operations in 1859. Without such tact and conciliation, it would have been impossible to carry out the complete and final survey successfully."

Although the splendid climate of Kashmir added to the special interest attaching to the country, and the unexplored tracts adjoining, made the Survey deservedly a great attraction, still the exposure of surveying in such a country is very trying to the constitution and many persons suffered greatly. The lower valleys are very hot, and the solar radiation on hill sides is very powerful. The labor of climbing to great elevations has often been noticed by explorers. The Surveyor however arriving heated by physical exertion at great elevations has to stand on ridges or peaks exposed to strong cold winds while he is observing angles or sketching the ground. The alternations of heat and cold and the laborious exertion limits success to those persons who to the requisite professional qualifications can add the physical constitution to stand the hardships which the work imposes. It is very doubtful in the opinion of the Surveyor General whether the ability to undergo the requisite amount of fatigue and

exposure which mountain surveys entail can be reckoned on for a long continuance, and he apprehends that, except in rare instances, a frequent succession of well-trained young men would be necessary in extensive mountain surveys.

This map is a first instalment of this survey. The whole mountain tract south of Kashmir Proper has been completely Triangulated and Topographically surveyed, and the map thereof is now in course of construction. Altogether the area already surveyed amounts to twenty-two thousand square miles in three years, and forty thousand square miles of Triangulation, including all little Thibet, in four years, the chief merit of which achievement is due deservedly to Captain Montgomerie. The Surveyor General has requested that this may be submitted for the opinion of the Council of the Royal Geographical Society together with the chart of the Triangulation on which it is based, as a work of accurate geography in a region hitherto imperfectly explored, and it is hoped that it may obtain for Captain Montogomerie some mark of the approbation of that learned body.

The Surveyor General hopes next year to complete the maps of the remaining Sub-Himalayan portion now in hand by the completion of which the entire tract of Mountain Frontier from the Ganges to the Cabul Territory will have been finished under his superintendence, and rendered available for incorporation into the Indian Atlas.

The party under Captain Montgomerie is now engaged in Thibet. The country is exceedingly difficult and the strength of the party much diminished. In the progress of the survey advantage has been taken of the opportunity to extend accurate geographical knowledge by fixing numerous peaks in the Karakoram and Mustag ranges. One of those already determined on the Karakoram range, along which runs the boundary between Ladakh and Yarkund, one hundred and fifty-eight miles N. E. of Srinagar, is 28,278 feet high (provisionally settled only, being liable to a small correction when the levelling operations from the sea level at Karachi, now in progress, are completed). None of the peaks in the neighbourhood of K 2 come nearly up to it though there is one fine group about sixteen miles away that is generally a little over twenty-six thousand. This is probably the second highest mountain in the world, as it exceeds Kanchinginga by

122 feet, but is lower than Mount Everest by 724 feet, as measured by the Surveyor General in 1847.

It is expected that Captain Montgomerie will be able to fix points up to 36° 30′ N. latitude, but it is doubted whether he will be able to get in all the Topography quite so far as that, in consequence of the wild and Yághí state of some of the people.

It has been specially recommended that the map of Kashmir be engraved or at least lithographed in England as soon as possible, in order that its results may be rendered speedily available for geological purposes as well as useful to public officers, travellers and the public generally.

The panoramic sketch exhibited, taken by Captain Montgomerie, which is a fair specimen of Calcutta Lithography, will give some idea of the peaks, if the observer supposes himself to be in any way near the Takt-i-súlímán close to the city. The sketch begins on the left about south-east and goes round nearly to north-west.

The first long low bit without snow, starting from the left, is where the Bamhal road crosses. About $13\frac{1}{10}$ inches from the left the peak looking over the Peer is one of the principal stations, by means of which the triangulation was brought over the Pir Panjal range. At about eighteen inches come in the craggy Koserin Kútúr peaks described as the three Bs.

The Pir Punjal pass is not visible, it is believed the range is about twenty-seven inches from the left. The highest peak of all is, Tattakúti with a very steep precipice to its right, it is about thirty-two inches from the left. The Baramoula gap is three inches from the right. If the sketch is held over the map the connection will be seen and the cliffs will be made out, coloured burnt sienna on the map, that separate the lower from the upper level ground.

During the present season the snow is very low down and the work is nearly all in high ground, which is very inconvenient. It may be difficult for a Calcutta resident to imagine snow inconvenient, but campaigning on the top of it soon undeceives one.

The party has now gone into Ladakh and hope to fix Leh and some places beyond. The small index plan shews roughly the extent of country embraced by the trigonometrical and topographical operations in the Himalayas tinted yellow up to the parallel of 36° N.

latitude. The Punjab Proper tinted pink having been completed by the Revenue Survey operations, the upper portion of the Derajat alone remaining.

The above information is chiefly taken from the reports of Colonel Waugh, Surveyor General of India and Captain Montgomerie, I am also indebted for assistance to Mr. J. O. N. James, Chief Draftsman of the Surveyor General's Office, who has for some years been employed in the survey of the adjoining districts.

The Cartilaginous Fishes of Lower Bengal.—By Edward Blyth.

The following does not profess to be a complete catalogue of the cartilaginous fishes that inhabit the *embouchure* of the Ganges, but merely of those which I have personally obtained in the fresh state, chiefly in the Calcutta fish-bazars; and having lately had occasion to look them over, and paid some attention to the group, it may be useful to give an enumeration of the species observed, especially as in the genus Trygon it appears that several permanently distinct races or species have been confounded under Tr. uarnak, (Forskal).

The cartilaginous fishes which I have obtained in Calcutta are as follow:—

1. Stegostoma fasciatum, Müller and Henle: uniformly spotted variety, figured and described as *St. carinatum* in *J. A. S.* XVI, 725. One specimen only, procured at the Sandheads. Another, like it, is in the museum of the Calcutta Medical College.

2. Squalus (Scoliodon) laticaudus, M. and H. A small species, occasionally brought to the bazar. I have not seen it more than $1\frac{1}{2}$ ft. in length.

3. Sq. (Carcharinus) Milberti, (? Val.). One specimen obtained, $2\frac{1}{2}$ ft. long. A skull from the Bay, of an individual probably about 7 ft. long, has the largest upper teeth measuring $\frac{1}{2}$ in. and upwards along their lateral margins: other teeth, of apparently the same species, from the Indian Ocean, have a lateral margin of $1\frac{7}{8}$ in., and extreme breadth at base of $1\frac{5}{8}$ in.;* they more nearly resemble the

* Even these are small, however, in comparison with the huge fossil teeth of the Carcharias megalodon and others figured by Agassiz, and those by Dr. Gibbes in the 'Journal of the Academy of Natural Sciences of Philadelphia,' for July, 1848.

teeth of Sq. LAMIA, as figured by Müller and Henle; but the fins differ much from those of Sq. LAMIA, the pectorals being of moderate size and remarkably falcate: tail and posterior fins conspicuously black-margined. Sq. MILBERTI is noted from India in Dr. Gray's British Museum catalogue; and the present is perhaps Dr. Gray's Indian species, though probably distinct from Sq. MILBERTI *(verus)*.

4. Sq. (C.) GANGETICUS, (M. and H.) In Müller and Henle's outline of the lower surface of the head, drawn evidently from a dry specimen, the distance from muzzle to mouth is not sufficiently great. I have not known this species to exceed 7 ft. in length, but have seen many of that size.

5. Sq. (C.) TEMMINCKII, (M. and H.) Very common; but rarely exceeding 5 ft. long, so far as I have observed.

6. Sq. (C.) MELANOPTERUS, (Quoy and Gaymard). Not common: small individuals (under 3 ft.) occasionally brought, but we have the teeth of one which must have been at least 6 or 7 ft.

7. SPHYRNIAS BLOCHII, (Val.): *Zygæna laticeps*, Cantor, *passim*. Common. The largest specimens rarely exceed 4 ft. in length.

8. GALEOCERDO TIGRINUS, M. and H. One large specimen, obtained towards the mouth of the river. Length 11 ft.

9. PRISTIS ANTIQUORUM, Latham. Small individuals are not unfrequently brought to the bazar. We have a snout or rostrum in the museum 5 ft. in length and 11 in. broad at the hindmost teeth.

10. PR. PECTINATUS, Latham. Much commoner than the other. A mutilated specimen and portion of the snout of a larger one were sent to the museum from Asám (!) some years ago by Col. Jenkins.

11. RHINOBATUS GRANULATUS, Cuv. Now and then brought; sometimes from 6 to 7 ft. in length.*

* Col. Jenkins heard much of a 'snow fish' of great rarity, the skin of which is prized as a medicine by the people of Asám. It is said by them to inhabit the snows of the Butan mountains! Sending me some fragments of the skin for examination, there was no difficulty in recognising the RHINOBATUS GRANULATUS: probably procured towards the sea; but as PRISTIS PECTINATUS and HYPOLOPHUS SEPHEN ascend many hundred miles up the great rivers, perhaps the RHINOBATUS does so likewise.

In *J. A. S.* XIII, 176, the then Lieut. J. T. Cunningham, in his 'General account of Kunáwar,' remarks that "the mysterious *Gangball*, or 'snow fish,'

12. Rh. obtusus, M. and H. Comparatively rare. I have not seen it more than $2\frac{1}{2}$ ft. long.

13. Dasyatis microura, (Bloch); *Raia pœcilura*, Shaw. Rare.

14. Hypolophus sephen, (Forsk.): *Raia sancur*, B. H. (founded on mutilated individuals, the caudal spine of which had been extracted). Common.

15. Aetobatis flagellum, (Bloch.). Of this fine species I lately obtained a small specimen, with tail and spines complete, and another and larger specimen with mutilated tail. Small dried fish of this species are sometimes brought in considerable quantity.

N. B.—The *Myliobatis macropterus* of McClelland *(Calc. Journ. Nat. Hist.* I, 60, and pl. II, f. 1,) has never occurred to me. Drs. Cantor and Bleeker refer it to Aetobatis narinari.

The Trygons or ordinary 'Sting-rays' are here deferred to the last, because the species of them do not appear to have been properly discriminated. All that I have obtained have the tail wholly finless, or with merely such rudiment as in Tr. imbricatus.

The Indian species fall into two principal groups, which might well stand as distinct genera.

In the first the dorsal surface and tail are sprinkled over throughout with detached limpet-shaped tubercles, and there is usually no large globular central tubercle (or tubercles, as generally in the others and also in Hypolophus sephen).* Anterior margin of the disk exceedingly obtuse, the expanded pectorals being continued forward almost to a transverse line with the medial peak where they

with four short legs and a human face, may be in fact, as in description, a fabled animal; but it is talked of, and is said to dwell only about the limits of the snow." What is here referred to are probably certain sand-burrowing Lizards of Afghánistán, which in the dried state are sold as medicine all over India. One is the true Egyptian Scinque, Scincus officinalis, Laurenti. Another sent by the same name by Major Lumsden, late in charge of the Kandahar Mission, is the Sphænocephalus tridactylus, nobis, *J. A. S.* XX, 654. Both were obtained in the vicinity of Kandahar.

* Since the above was written, I have seen an example of Tr. marginatus in the museum of the Calcutta Medical College, which has a central tubercle of moderate size followed by a small one. This, I suspect, is very unusual.

unite, on either side of which the outline describes merely a slight concavity.*

16. Trygon marginatus, nobis, *n. s.* Grey above, buffy-white below with a dark border except in front; the tail $1\frac{1}{2}$ the length of the disk. A large species, adults of which are mostly quartered when brought to the bazar, and then more or less sliced up by the dealers, so that it is difficult to examine them properly. Breadth of one 52 in., with tail 83 in.: distance of eyes apart 7 in.† Form a trifle longer than broad, or shorter than broad if the length be measured from front to base of tail. In adults the small limpet-shaped tubercles are disposed not only over the entire upper surface, but also on the broad dark margin of the lower-parts (from which the species derives its trivial name): they are larger and more closely set along the middle, though for the most part not in absolute contact, and are gradually smaller and less crowded laterally, but again become more crowded towards the margin; and there is commonly an irregular range of pointed tubercles larger than the rest on either side, about 3 in. from the median line in adults. Tail tuberculated all round to within $2\frac{1}{2}$ in. of its base underneath, and having scattered and pointed tubercles much larger than the rest above, from its base to the large caudal spine. The colour of this fish is a light albescent-brown above, with still a faint blackish wash; white, with more or less of a buffy tinge, below, and a broad dark margin to the lower-parts except in front, but including the ventrals, this border consisting of numerous large round spots on its inner edge, some wholly and others partially detached from the rest; a few irregular spots are also generally scattered upon the pectorals. The under-surface of the tail is white, with similar scattered dark spots, which gradually become more numerous and coalescent till they assume a marbled appearance, and the apical half of the tail is wholly dark. This dark colour is more intense in the young, approaching more or less to black: whereas in

* I presume this form to be characteristic of the division. In the Medical College specimen the peak is stretched out of all shape. However, in a very large example just added to the museum, the narrow medial peak projected more than in the young.

† A large specimen has just been presented to the Society, fresh, by Rája Rádákhánt Deb, 5 ft. across; tail imperfect.

adults it is weaker and more greyish, and in them it is also roughened with minute limpet-shaped tubercles; these appear again about the gill-openings, and more sparingly medially, and a few are scattered over the entire lower surface, which are more readily detected by the feel than by the sight in the fresh specimen. From between the eyes to the sides of the tail, and traceable along two-thirds of that organ, are a couple of series of vermiculated lines; and there is a double series of the same along the middle of the back. In a young female, measuring 18 in. to base of tail, with greatest breadth of disk 20½ in., and tail 29 in., the tubercles generally are less crowded than in the adult, especially on the tail, where there is little indication of their future development. Although the caudal spine had been broken away in every specimen examined, yet from the groove which it occupied, that of an adult is shewn to be 7¼ in. long.* It is by no means a rare species, though seldom to be obtained perfect in the fish-bazars.

Tr. atrocissimus, nobis, *n. s.* We have in the museum a portion of the tail, above 4 ft. in length, of an enormous Trygon, which is evidently a second species of this particular sub-group. The site of the caudal spine is conspicuous as usual, indicating a much stouter but not so long a weapon as that of Tr. marginatus. The limpet-shaped tubercles are very much larger and fewer in number than in the other, each being much expanded at base and abruptly rising to a sharp point in the centre; they are of different sizes intermixed, and here and there two or more of them are blended at base, and the tail appears to be naturally much compressed. Below the spine, it is naked underneath along the middle, and beyond the spine this medial portion of the tail underneath is studded with small tubercles. Where broken off, at a distance of 4 ft. from the spine, it seems to expand vertically, being there twice as deep as broad. It is a truly frightful and most

* The Medical College specimen has a perfect caudal spine. It is larger than the young example above described, with tail about 40 in., and spine 2¾ in.; some small sharp tubercles around the base of the latter. The dorsal tubercles are smaller than in the other; those on the base of the tail more crowded. Sex male, that of the other female. The marginal band of the lower surface is represented only by a few distantly scattered spots.

formidable weapon. Habitat of the species unknown, but probably the Indian Ocean.

The ordinary Trygons are of a more rhomboidal shape, with close-set flattened tubercles on the dorsal surface, occupying its medial third only or less (according to the species), and the lateral border of this tuberculated space is abruptly defined in adults. They have generally one or more large globular bony tubercles in the centre of the dorsal surface.

Some have two spines on a comparatively short tail, as—

17. Tr. imbricatus, (Bloch), to which I doubt if Russell's fig. IV correctly applies, and upon this is founded *Pastinaca dorsalis*, Swainson. Russell's figure more probably represents the Tr. immunis, Raffles *(Zool. App.* to Life of Sir S. Raffles) ;* and other double-spined species (also with comparatively short tail) exist in the Tr. lymna figured by Rüppell, and Tr. akoju and Tr. kuhlii figured by Müller and Henle. As Buchanan Hamilton approximates his *Raia fluviatilis* to *R. lymna*, though referring merely to "*the spine* on its tail," I think it likely that the present species is intended by him, especially as it is so very abundant. They are not unfrequently brought to the bazar with one spine only torn away by the fishermen; but this small species is commonly brought with both caudal spines complete. The males are larger than the females, and have proportionally longer tail; and very commonly the second caudal spine of the female more especially does not extend beyond the first one. I have not seen the male larger than $7\frac{3}{4}$ in. to base of tail, the tail 13 in., and caudal spines $2\frac{1}{2}$ in. Some have a small lanceolated tubercle on centre of dorsal surface, others two or more even to a series of five or six along the median line. This species is so very often brought in pairs to the bazar, a male and a female, that I cannot help suspecting that it lives in pairs, the two being commonly taken together.

Another type has an equally short tail, armed with one spine only, and no dorsal tubercles whatever. To this appertains—

18. Tr. walga, M. and H.: probably *Tr. sindraki*, Cuv., and

* "*Tr.* corpore subquadrato, omnino lævi, caudâ longiore, spinis duabis serratis citra medium armatâ."

Pastinaca brevicauda, Swainson, founded on Russell's fig. V; but in this figure the tail is represented as being still shorter than in Tr. walga. The larger of two specimens (a female) measures $3\frac{1}{2}$ in. to base of tail, the tail 6 in.; the latter being broad at the base, and very rapidly attenuating from base of spine, which last is $1\frac{1}{4}$ in. long. These specimens have much the appearance of being the young of some considerably larger species; but the shortness of the tail separates it from any of the following.*

The remainder have exceedingly long tails, from three to four times the length of the head and body. All have at least one large bony tubercle in the centre of the dorsal surface. At least five species are brought more or less commonly to the Calcutta fish-bazars, which are easily distinguished at any age, though supposed by Dr. Cantor and others to be merely varieties, or characteristic of different ages, of Tr. uarnak, (Forsk.)

19. Tr. Bleekeri, nobis, *n. s.* A large species, plain dark brown *above and below* with a narrowish white median patch on belly. Peak, or anterior junction of pectorals, considerably more prolonged and pointed than in the others. Medial third of dorsal surface studded with intermixed larger and smaller round flat tubercles, continued along the upper surface of the tail as far as the caudal spines, then thickly covering the whole tail to its extremity in adults, or with a naked line below in specimens more than half-grown. Along the median line of the tail above, the tubercles are not larger than the rest. The usual large round tubercle on centre of back, and commonly three smaller, set in form of a triangle, before it and three similar behind it. In all that I have seen the caudal spine had been broken or entirely torn out by the fishermen. Length of one 25 in. to base of tail, the tail 72 in.; of another 15 and 56 in.

20. Tr. Elliоti, nobis, *n. s.* Pale greyish olive-brown above and white below: the united pectorals not more prolonged in front than in Tr. uarnak. Size of last; at least I have obtained one tail 6 ft. in length, but the fish was cut into small slices. A young individual $8\frac{1}{2}$ in. long to base of tail, $9\frac{1}{2}$ in. broad, with tail 29 in., has a central

* Dr. Bleeker gives the breadth of five specimens (four of them females) as 140 to 190 mill.

dorsal tubercle and another behind it, surrounding which is a group of small tubercles that might be covered by a crown-piece, except anteriorly where a few are scattered along the dorsal line and between the eyes,—the rest, including the tail, being wholly naked. A slight marbled appearance on the tail beyond the spine, but no distinct alternating bands. Another, only 10 in. to base of tail, has the dorsal tubercles fully developed, and a band of them upon the tail not reaching so far as the caudal spine. In a specimen 13 in. long, the tail measures 47 in.; and the tubercles on the tail (now that it is dry and shrunk) appear to extend two-thirds round its base anterior to the spine; but in the tail of 6 ft. long before noticed, the upper half only is tuberculated anterior to the spine. The usual central dorsal tubercle, with commonly one smaller before and another behind it; and the small tubercles, which extend over the medial third of the dorsal surface (as also in Tr. Bleekeri), are more uniform in size than in the other species. In one specimen of a tail, which I assign to this particular species with some hesitation, there are two sharp erect prickles in the median line towards its base, and others beyond the spine. A commoner species than the last.

21. Tr. Russellii, Gray; young figured in Hardwicke's *Ill. Ind. Zool.*: *Tr. Gerrardii*, Gray, *Brit. Mus. Catal.*, still younger. A beautiful species, covered above with large round dark spots, a few of which are generally confluent: tail banded throughout. Anterior peak more acute than in Tr. Elliotii, less so than in Tr. Bleekeri. In large specimens (3 ft. across) the spots continue as strongly marked as in the young, and are then more or less pale-centred, forming distinct rings more or less perfect in some specimens. But these markings, however vivid in the recent fish, are apt to disappear in old stuffed specimens, the tail-bands being longest retained; and a smooth young fish, with the spots on the upper surface obliterated, but retaining the bands on the tail, suits the description of *Tr. Gerrardii*, Gray. At the age figured by Hardwicke, the tubercles on the back are sparse and heart-shaped, and a single line of them (prolonged more or less into backward-curving prickles) is continued along the median line of the tail as far as its spine. These are retained in a specimen 12 in. in length (to base of tail); but in another of the same size they had disappeared—or perhaps had never made their

appearance—and the tail is wholly naked. In another, 15 in. (to base of tail), the medial portion of the back is densely tuberculated, and a series of tubercles (about six in number across) is continued along the base of tail to its spine; in another, 19½ in. (to base of tail), with tail 6 ft. in length, the series of caudal tubercles is still scarcely wider proportionally, and the tuberculated portion of the back is comparatively much narrower than in the several preceding species, being little more than a fifth of the entire breadth—instead of fully a third as in Tr. Bleekeri of half the size. In the adults, 3 ft. across,—a fresh one before me is 2¾ ft., and 2½ ft. to base of tail, with tail 7½ ft.,—the tubercles of the dorsal surface remain as in the last described, and cover just the upper half of the base of the tail as far as the spine, the lower half being quite naked. In general, there are a few tubercles rather larger than the rest, forming an irregular mesial line from the anterior third of the dorsal surface to the caudal spine. Half-grown individuals have commonly two larger tubercles on centre of back, either both heart-shaped or the anterior globular, while larger specimens shew an intermediate tubercle; and up to a considerable size, the thong of the tail is more sparsely tuberculated than in the others. In this particular species, also, the curious teeth are distinctly of a larger size than in the others, when examples of the same size are compared together.

22. Tr. variegatus, McClelland, *Calc. Journ. Nat. Hist.* I, 60, and pl. II, fig. 2. Shaped as in the last, and remarkable—even when half grown—for the caudal tubercles completely surrounding the tail to very near its base,—whereas in Tr. Russellii they never more than half surround it as far as the spine, even in the largest individuals. In an example of variegatus, measuring 16 in. to base of tail, with tail exceeding 3½ ft., the tubercles already nearly surround it anterior to its spine. Moreover, in examples of equal size, the teeth of Russellii are conspicuously larger. The markings, too, are quite different; Tr. variegatus having the dorsal surface uniformly and beautifully marked throughout with meandering lines, the dark and pale colour in equal proportions or even the dark predominating—not as represented in McClelland's figure. Length of one 3 ft. to base of tail, and 3 ft. 4 in. in greatest width: tail not quite perfect, but of the same proportionate length as in the others. The bands

on the tail are less conspicuous and distinct than in Tr. Russellii. In stuffed specimens the markings are apt to disappear totally; and it is as well, therefore, to preserve a portion of the fresh skin of this and other species in spirit.

23. Tr. uarnak, (Forsk.) Young figured in Rüppell's *Neue Wirbelthiere.* Much like Tr. Russellii, but not attaining (I suspect) to nearly so great a size; the dorsal surface speckled with numerous *small* spots (as in Rüppell's figure). The teeth also are considerably smaller than in Tr. Russellii in specimens of corresponding size. In an example less than a foot in length (*minus* the tail), or of a size at which Tr. Russellii has few and sparse tubercles on the back and a single row only of curved tubercles at base of tail (as shewn in Hardwicke's figure), Tr. uarnak has the dorsal tubercles fully developed, and a broader band of them at base of tail than is seen in Tr. Russellii of more than double the size,—whence I conclude that it is a much smaller species when full-grown, and that the tubercles probably surround the base of tail in adults, as in Tr. variegatus. I have only once obtained it; and the specimen has a single large tubercle on centre of back, and three slightly larger than the rest placed in a triangle behind the principal tubercle.*

Of these various long-tailed Trygons I have seen no intermediate specimens; and in the fresh state they may be recognised at a glance by the colouring, which unfortunately disappears more or less completely in dry museum specimens. The only species which I have obtained with the caudal spine are the small Tr. imbricatus and Tr. walga, Hypolophus sephen (small), and Aëtobatis flagellum (small); and I am not aware that any difference occurs in the structure of that formidable weapon in the different species here noticed.

While preparing this paper, I have (in the course of a few weeks) obtained fresh examples in the Calcutta fish-bazars of Trygon mar-

* I have since obtained another, not very much smaller, in which the tail is quite naked. Two examples of Tr. Russellii were procured on the same occasion; and the peak is more obtuse in Tr. uarnak than in Tr. Russellii; as seen in fresh specimens,—the dry being very much subject to be stretched out of the proper shape. Dr. Bleeker gives the breadth of Tr. uarnak (fæm.) as 240 et 315 mill. *Virk. Bat. Gen.*, Vol. XXIV, (1852); but then he considers Tr. Russellii to be identical with it.

GINATUS, TR. IMBRICATUS, TR. WALGA, TR. BLEEKERI, TR. ELLIOTI, TR. RUSSELLII, TR. UARNAK, and TR. VARIEGATUS; besides HYPOLOPHUS SEPHEN, AETOBATIS FLAGELLUM, RHINOBATUS GRANULATUS, SPHYRNIAS BLOCHEI, PRISTIS ANTIQUORUM and PR. PECTINATUS, and SQUALUS MILBERTI (?), SQ. GANGETICUS, and SQ. TEMMINCKII; —in all seventeen species of cartilaginous fishes.

I add a brief notice of a young TRYGON which I cannot find to be described, obtained on the Arakan coast, and now in the Medical College Museum of Calcutta.

TR. CROZIERI, nobis, *n. s.* Tail twice as long as the disk, compressed, with a considerable membrane on more than half the length of its inferior surface, commencing below the insertion of the spine, being nowhere however so high or deep as the tail itself. United pectorals much prolonged into an acute peak anteriorly. Disk smooth, with a mesial dorsal line of tubercles, beginning a little behind the head, where a line of 11 (the last of them increasing in size) have made their appearance above the surface; the rest are narrower and below the surface of the skin to the base of tail, where a series of ten very stout prickles or decumbent spinelets—compressed and pointing backwards and forming a range like the teeth of a saw, —is continued nearly to the base of the caudal spine; the latter being much as in other Trygons, and having a backward-directed serrature on each side for its terminal third. The colouring appears to have been pale above, but no markings are discernible in the dry specimen. Length of disk 11 in. and breadth the same; tail 23 in. This TRYGON has the appearance of being the young of a very large species. Anterior to the range of 11 developed caudal spinelets, two others can be distinguished of equally large size within the skin, and anterior to these the series consists of much smaller and narrow spinelets, until again the size is abruptly greater a little anterior to the centre of the disk.

April 2nd, 1859.

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL,

For January, 1860.

The Annual General Meeting of the Society was held on the 4th January.

A. Grote Esq., President, in the Chair.

The following gentlemen, duly proposed at the last Meeting, were balloted for and elected Ordinary members.

Prince Mahomed Jallaludin of Mysore.

T. R. Grant, Esq.

H. V. Bayley, Esq., B. C. S. (re-elected).

W. J. Rivett Carnac, Esq. B. C. S.

Baboo Preonath Sett.

Dr. Theodore Duka.

Major J. J. M. Innes, Bengal Engineers.

B. E. E. Lindsay, Esq.

Reverend J. C. Thompson, (re-elected).

C. Oldham Esq. Geological Survey.

Capt. Alexander Fraser, Bengal Engineers.

David K. Mair, Esq. M. A.

The Council proposed for Ballot at the next meeting Mr. Robert Swinhoe, of H. M. Consulate, Amoy, and the Rev. H. Baker, Junior, Alipie, South Malabar, as corresponding members of the Society.

The following gentlemen were named for ballot as ordinary members at the next meeting.

Colonel E. W. S. Scott, Bengal Artillery, proposed by the Ven'ble Archdeacon Pratt, seconded by Colonel Baird Smith.

Major Geo. Pearse, proposed by Mr. Atkinson, seconded by Mr. E. A. Samuells.

Dr. F. J. Mouat, proposed (for re-election) by Mr. Atkinson, seconded by Dr. T. Thomson.

Capt. T. G. Montgomeric, Bengal Engineers, F. R. G. S., Gt. Trigl. Survey of India, proposed by Major H. L. Thuillier, seconded by Col. Waugh.

The Secretary read the following Report for 1859:

ANNUAL REPORT.

The Council of the Asiatic Society have the satisfaction of submitting their usual Annual Report, exhibiting the state of the Society's affairs during the past year.

At the close of the year 1858, there were 132 ordinary members on the Rolls of the Society, of whom 39 were absent in Europe. The number of retirements since that time has been 4, which, with one death, gives a total loss of five; on the other hand, there have been no less than 53 elections of ordinary members, which have brought up the number on the effective list to 135, against 95 of the preceding year. The total number now on the rolls is 180, of whom 44 are absent from India, and one is a life member.

	Ordinary.	Paying.	Absent.
1851 ...	130	124	6
1852 ...	139	122	17
1853 ...	146	123	23
1854 ...	155	129	26
1855 ...	162	128	34
1856 ...	167	131	36
1857 ...	147	109	38
1858 ...	133	95	38
1859 ...	180	135	45

The Hon'ble Sir J. W. Colvile, Kt., the late President of the Society, has, on his departure for Europe, been added to the list of honorary members and Drs. Max Müller, P. Bleeker, and H. Frederick, have been elected corresponding members of the Society.

In alluding to the obituary of the past year, the Council desire especially to express their regret at the loss which the Society and the cause of science have sustained by the untimely death of one of their corresponding members, Herr Adolphe Schlagintweit, while on his travels in the neighbourhood of Kokan. From the time of his arrival in India in 1855, he devoted his entire energies to the prosecution of physical researches, and contributed several valuable papers to the journal of this Society. Sir George Staunton died in June last. He was one of the oldest Honorary members of the Society and a distinguished Oriental scholar. The only other member lost by death is Col. M. E. Loftie.

Finance.

In April 1859, the Council submitted a report, recommending that, in modification of the provisions of Rules 8, 10, and 11, of the Society's Code, ordinary members should be divided into two classes, Resident and Non-resident; that all members who reside within 30 miles of Calcutta should be deemed resident and required to pay an admission fee of Rupees 32 and a quarterly subscription of Rs. 12, and that Non-residents should pay an admission fee of Rs. 32 and a quarterly contribution of Rs. 6. This report was adopted at a special general meeting held in July last.

In making this recommendation the Council entertained a hope that by rendering the Society more easily accessible to the literary and scientific public of India, they might draw to its ranks many whose co-operation would prove highly valuable. They are glad to find that they were not mistaken. The accessions made to the list of members during the last five months number no less than 36, and the total number for the year stands at 53, against 16 in 1858, and 6 in the preceding year.

The liabilities of the Society amount to Rupees 5,376-9 principally on account of printing Journals and Catalogues; and the Cash assets to Rupees 7,878-13, (including Co.'s paper for Rs. 5000) besides outstanding claims to the extent of Rs. 6,432-2-4 a great portion of which will probably be realised in the course of the current year.

Owing, however, to the heavy outlay this year for the repairs of the Society's premises, the expenditure has been unusually large.

By Statement No. 1, it will be seen that the disbursements amount to Rs. 15,072-12, while the total receipts amount to Rs. 12,921-9.

The Council would again urge on the members the imperative necessity of using every exertion to increase their numbers in order that the Society may meet the expenses of the coming year without being obliged to curtail its usefulness by any untoward retrenchments.

The probable expenses of the ensuing year may be estimated at Rs. 12,603, the estimate under the usual heads being:

Expenditure.

Museum, ...	Rs. 5,200	0	0
Library Establishment, ...	936	0	0
Purchase of Books, ...	1,700	0	0

Book-binding,	425	0	0
Contingencies,	200	0	0
General Establishment,	1,700	0	0
Journal,	1,500	0	0
Miscellaneous,	500	0	0
Deposit,	100	0	0
Building,	1,040	0	0
Total, Rs.	13,303	0	0
Monthly Average,	1,108	9	4

This amount would not be met by the present reduced rates of subscription, unless with an increased number of members, but the Council confidently trust that the late revival of interest in the Society will continue, and that with fresh accessions to its numbers all cause for anxiety regarding the Society's prospects may be removed.

INCOME.

75 Residents at Rs. 48 per annum, Rs.	3,600	0	0
60 Non-residents at Rs. 24 per annum,	1,440	0	0
Admission Fees,	544	0	0
Government Grant,	3,600	0	0
Sale of Books,	780	0	0
Journal,	925	0	0
Interest,	245	0	0
Miscellaneous,	50	0	0
Rs.	11,184	0	0

Making up the probable Income of the forthcoming year.

PROPOSED IMPERIAL MUSEUM.

The subject having remained for some time in abeyance on account of the disturbances in the N. W. Provinces, the Council, in October 1858, under Authority delegated to them by the Society in May 1857, submitted a proposition to the Government of India for the establishment of a public Museum, to which, under certain restrictions the whole of the Society's collections might be transferred, except the Library.

The Government of India having intimated their inability for the present to entertain the proposition, the correspondence on the subject has since been submitted to the Secretary of State for India, and copies have been printed and laid before the members of the Society.

Library.

The Library has received an accession of 345 volumes, among which are some important works on Natural History purchased at the sale of the late Dr. Walker's Library. The Society has regularly received the publications of the different learned and Scientific Institutions with which it is in correspondence, and the purchases include all important Oriental works together with most of the leading scientific and other periodicals of the day.

Museum.

Number of visitors from January to December, 1859, exclusive of Sundays and other Christian holidays.

Natives.	Males,	59,123
	Females,	3,288
Europeans.	Males,	2,964
	Females,	1,260
	Total	66,635

Several valuable additions have been made to the Museum during the past year, and it continues to be resorted to largely by the European and Native community. The average number of visitors, as per margin, appears to exceed 185 persons per day.

Dr. Falconer's important Catalogue of Fossil Remains of Vertebrata from the Sewalik Hills, the Nerbudda, Perim Island, &c., has been completed and copies have been distributed under the orders of the Council.

Mr. W. Theobald, Junior, has been engaged in arranging the shells in the Society's Cabinet and in compiling a Catalogue for publication; and Mr. H. F. Blanford has undertaken to arrange and catalogue the Fossil remains in the Society's collection which are not included in Dr. Falconer's work.

Journal.

Four Nos. of the Journal have been published during the year and a fifth is in the Press.

The Council are gratified to notice that the contributions received have been of more than usual interest and importance, and they trust that with the restoration of peace the cause of Literature and

Science in India may keep pace with the advancing prosperity of the country.

Oriental Fund.

The Society in October last adopted a recommendation of the Council to commence a new series of the Bibliotheca Indica, which was to open with a translation of the Surya Siddhanta by Pundit Bapu Deva Shastri, the Ven'ble Archdeacon Pratt having undertaken to aid in carrying it through the press. The Council is glad to be able to announce that the printing of this work has already commenced. Meanwhile the editors of the old series are busily employed in completing their several works. In August last the Society adopted the proposal of the Council that one of the large Arabic works left unfinished at the suspension of the Bibliotheca Indica in 1856, should be completed, viz., the Dictionary of technical terms. At the suggestion of Captain Lees an arrangement has been made by which the expenses of printing and editing will be materially reduced.

The number of Fasciculi issued during the year is 8, of these 6 have been carried through the press by Baboo Rajendralal Mittra, one by Mr. F. E. Hall, and one by Dr. Roer and Mr. Cowell, (Dr. Roer's official duties occupying too much of his time to permit of his continuing the work under his own sole editorship as heretofore.)

The titles of the Fasciculi published during the year are

1. Taittiriya Brahmana of the Black Yajur Veda, Fasc. IV. to IX., being Nos. 150 to 155, edited by Baboo Rajendralal Mittra.

2. Vasavadatta, Fasc. III., finishing the work, being No. 148, edited by F. E. Hall, M. A.

3. Sanhita of the Black Yajur Veda, Fasc. IX., being No. 149, edited by Dr. E. Roer and Mr. E. B. Cowell.

Officers.

The Assistant Secretary Baboo Gour Doss Bysack is still absent on leave, and Baboo Bhobany Persaud Dutt has continued to act as his substitute.

The Council have every reason to be satisfied with the zeal and assiduity with which the Curator and the acting Assistant Secretary have discharged their duties.

The President observed that the report was one which would he hoped be considered satisfactory by the meeting. It remained to be seen how far the late reduction of subscription would succeed in its object, but so far as could be judged from the large accession of members during the year, he thought the experiment promised well. Although 36 elections only out of the 53 had occurred since the reduction was made, the others he thought were in a great measure due to the expectation that it would be made. He thought the Council were justified in pointing to the improved character of the numbers of the Journal which had been published during the year, several of the papers published in them having been very interesting. He hoped that in the course of the coming year the Council would be able, besides the Catalogues on which Mr. Blanford and Mr. Theobald were engaged, to bring out another of the Mammal specimens contained in the Society's Museum. Their Curator Mr. Blyth had already made some progress in this compilation and had undertaken soon to complete it.

The meeting then proceeded to ballot for the Council and Officers for the ensuing year.

A. Fisher, Esq. and D. M. Gardner, Esq. were appointed scrutineers, and at the close of the ballot the Chairman announced the following result.

A. Grote, Esq. *President.*

Major R. Strachey,
Dr. T. Thompson,
Baboo Ramapersaud Roy,
} *Vice-Presidents.*

Colonel R. Baird Smith.
Baboo Rajendralal Mittra.
E. A. Samuells, Esq.
Baboo Ramgopal Ghose.
T. Oldham, Esq.
Capt. C. H. Dickens.
Capt. W. N. Lees.
Dr. W. Crozier.
R. Jones, Esq.

W. S. Atkinson, Esq.,
E. B. Cowell, Esq.,
} *Joint Secretaries.*

ABSTRACT STATEMENT

OF

RECEIPTS AND DISBURSEMENTS

OF THE

ASIATIC SOCIETY,

FOR

THE YEAR, 1859.

STATEMENT

Abstract of the Cash Accounts

RECEIPTS.

	1858.						1859.		
CONTRIBUTIONS, ...	6,923	8	0				6,750	0	0
Received from Members.									
ADMISSION FEES.									
Received from New Members, ...	96	0	0				1,248	0	0
JOURNAL.									
Sale proceeds and Subscriptions to the Journal of the Asiatic Society, ...	496	3	0				339	0	0
LIBRARY, ...	784	12	3				552	6	0
Sale proceeds of Books.									
MUSEUM OF ZOOLOGY.									
Received from the General Treasury at 300 Rs. per month, ...	3,600	0	0				3,600	0	0
SECRETARY'S OFFICE, ...	22	10	6						
Discount on Postage Stamps, ...				0	12	6			
Refund of Postage, ...				9	9	0			
							10	5	6
VESTED FUND.									
Interest on Company's Paper from the Bank of Bengal, ...	286	1	3				245	0	0
GENERAL ESTABLISHMENT.									
Savings, ...	36	10	5				4	10	6
DEPOSIT, ...	74	4	0						
W. Theobald, Esq. Junr.... ...				32	0	0			
E. B. Cowell, Esq.				12	13	0			
Baboo Nobinchunder Roy, ...				5	4	0			
Rev. F. Mason, ...				0	8	0			
Moonshee Narain Doss, ...				10	0	0			
C. W. Wilmot, Esq.				0	7	0			
Col. J. Abbott, ...				19	7	0			
Major S. R. Tickell, ...				18	0	0			
							98	7	0
MESSRS. WILLIAMS AND NORGATE, ...	90	8	0						
Received through Rajah Radhacant Deva, duty on parcels, ...				1	12	0			
Proceeds of Sundry Books sold on their account:									
Weber's Modern Investigation on Ancient India, ...				1	0	0			
A Copy of Bopp's Comparative Grammar, ...				25	0	0			
A Copy of Muller's Buddhism, ...				1	0	0			
Goldstucker's Sanskrit and English Dictionary, Vol. I. P. I. II.				5	0	0			
Ditto Ditto, Vol. I. P. III.				2	8	0			
							36	4	0
Carried over,							12,884	1	0

No. 1.

of the Asiatic Society, for 1859.

DISBURSEMENTS.

	1858.			1859.		
JOURNAL, ...	352 11 10					
Freight, ...				98 2 3		
Printing Charges, ...				1,559 6 0		
Commission on Sale of Books, ...				6 15 6		
Purchase of Postage Stamps, ...				31 4 0		
Engraving, ...				3 0 0		
Copying Charges, ...				4 0 0		
Packing Charges, ...				11 4 0		
Purchasing a large Tin Box for Journal MSS. ...				2 4 9		
					1,716	4 6
LIBRARY, ...	1,595 3 10					
Salary of the Librarian 12 months at 70 per month,				840 0 0		
Establishment ditto, ...				78 0 0		
Purchase of Books, ...				573 8 0		
Book Binding, ...				357 12 0		
Commission on Sale of Books, ...				58 6 0		
Printing Receipts, &c.				10 8 0		
Stone Pedestals for Almirahs, ...				3 1 6		
A new Teak wood double folding-door glass Case, ...				350 0 0		
Landing Charges, ...				1 12 9		
Petty Charges, ...				3 1 0		
					2,276	1 3
MUSEUM, ...	5,463 15 0					
Salary of the Curator E. Blyth, Esq. at 250 per month 12 months, ...				3,000 0 0		
House-rent at 40 per month, 12 months, ...				480 0 0		
Establishment, ...				612 5 2		
Extra Taxidermists' Salary, ...				772 13 0		
Contingent Charges, ...				326 13 11		
2 Teak wood Glass Shell-cases and a case for preserving Skeletons, ...				381 4 0		
Freight and Godown rent on a case of Ethnological Copper Casts, ...				11 15 3		
Bullock Train hire, ...				6 11 0		
Making a mould from a piece of Iron Stone and taking two casts of the same, ...				13 0 0		
					5,604	14 4
SECRETARY'S OFFICE, ...	1,661 0 9					
General Establishment, ...				822 0 0		
Secretary's Office Establishment, ...				672 0 0		
Petty Charges, ...				14 3 9		
Stationery, ...				62 13 6		
Purchase of Postage Stamps, ...				40 13 0		
Postage, ...				6 11 6		
Three Blank Books for Writing, ...				10 12 0		
A Sheet Almanac for 1859, ...				1 0 0		
Printing 300 Copies of Society's Rules, &c. ...				85 8 0		
					1,715	13 9
				Carried over,	11,313	1 10

						Brought over,	12,884	1	0
PROFIT AND LOSS.			122	0	0				
Received from Muddoosoodun Dey, a Copy of the Mahabharata, in part of amount written off in 1856, ...	...	...			...		10	0	0
BUILDING.									
Sale proceeds of 9 Old Beams,	...				...		27	8	0
BALANCE OF 1858.									
Bank of Bengal,	...	...	3,442	3	5				
In hand, ...	...	...	9	8	10				
						3,451	12	3	
Inefficient Balance,	...	...				1,578	3	9	
							5,030	0	0
						Co.'s Rupees. ...	17,951	9	0

The Asiatic Society's Rooms,
31*st Dec.* 1859.

Examined.
BHOBANYPROSAD DUTT,
Offg. Asst. Secy.

						Brought over,	11,313	1	10
Building, ...	356	4	0						
Assessment, ...				270	0	0			
Ditto for Lighting, ...				72	0	0			
Thoroughly repairing the Society's Premises as per Estimate, after deduction on account of sundry works not done, ...				2,206	3	0			
Sundry Contingent Charges on account of the repairs for removing Cases and other Articles,				180	10	0			
							2,728	13	0
Deposit Account, ...	167	15	0						
E. B. Cowell, Esq.				9	12	0			
Major J. G. Stephen, ...				32	0	0			
W. Theobald, Esq., Junr. ...				24	0	0			
							65	12	0
Vested Fund, ...	502	15	9						
Paid Commission for the Collection of Interest on Company's Paper, ...							0	9	10
Messrs. Williams and Norgate,	702	1	11						
Purchase of Books on their account:									
A Copy of Earase Buzurgan, ...				1	0	0			
A Copy of Bahar Ajum, Vol. I. and II.				50	0	0			
Freight for ditto, ...				6	14	0			
							57	14	0
Contributions.									
Refund of Contributions to Major A. Fytche,				64	0	0			
Ditto of ditto to Captain G. H. Saxton,				64	0	0			
							128	0	0
Miscellaneous, ...	279	8	6						
Repairing the Monument to the Memory of Sir William Jones, ...				30	0	0			
Advertising Meetings, ...				23	4	0			
Meeting Charges, ...				113	4	3			
Subscription to the Oriental Translation Fund from 1855 to 1859, ...				533	5	4			
Repairing 4 Argand Circular Hanging Lamps,				10	0	0			
Printing 25 Copies of Annual Accounts for 1857,				24	0	0			
New Mat for small room, ...				7	5	9			
Oiling, Cleaning and regulating a Clock,				6	0	0			
Petty Charges, ...				31	6	0			
							778	9	4
Balance, ...							15,072	12	0
Bank of Bengal, ...	2,796	14	3						
In hand, ...	9	14	9						
				2,806	13	0			
Inefficient Balance, ...				72	0	0			
							2,878	13	0
						Co.'s Rs....	17,951	9	0

E. E.
Edw. B. Cowell,
Secy. As. Socy.

STATEMENT

Abstract of the Oriental

	1858.						1859.		
SALE OF ORIENTAL PUBLICATIONS, Rs.	1,015	6	9						
Received by Sale of Bib. Indica, ...			...	1,150	15	6			
Ditto by Subscription to ditto, ...			...	108	10	0			
Ditto by Sale of White Yajur Veda, ...			...	57	8	0			
							1,317	1	6
GOVERNMENT ALLOWANCE.									
Received from the General Treasury, at 500 per month, ...	6,000	0	0			...	6,000	0	0
VESTED FUND.									
Interest on Company's Paper from the Bank of Bengal, ...	140	0	0			...	140	0	0
DEPOSIT.									
Received from Mahomed Hajee, ...	43	11	0			...	89	4	0
CUSTODY OF ORIENTAL WORKS.									
Savings of Establishment, ...	3	0	0			...	6	10	3
BIBL. INDICA.									
Received discount on Postage Stamps,			...			...	0	2	6
							7,553	2	3
BALANCE OF 1858.									
Bank of Bengal, ...	5,052	1	7						
In hand,...	5	0	5						
				5,057	2	0			
Inefficient Balance, ...			...	2,116	12	2			
							7,173	14	2
						Co.'s Rs.	14,727	0	5

The Asiatic Society's Rooms,
31*st Dec.* 1859.

Examined.
BHOBANYPROSAD DUTT,
Offg. Asst. Secy.

No. 2.

Fund for the year 1859.

	1858.						1859.		
SALE OF ORIENTAL PUBLICATIONS.									
Commission on Sale of Books, Rs.	42	8	0			...	134	2	0
VESTED FUND.									
Commission paid to the Bank of Bengal for collecting Interest on Company's Paper,...	35	0	9	0	5	8			
Fee for renewing a piece of Company's Paper,...			...	1	0	0			
							1	5	8
DEPOSIT.									
Paid Mahomed Hajee,... ...			...			...	12	5	0
CUSTODY OF ORIENTAL WORKS, ...	911	4	9						
Salary of Librarian at Rs. 30 per month,			...	360	0	0			
Establishment at Rs. 14 per month, ...			...	168	0	0			
Book binding, ...			...	192	8	0			
Books cleaning, ...			...	34	4	3			
A Blank Book for writing, ...			...	3	12	0			
Printing 1000 Copies of a Nagree and Bengali list of works for sale, ...			...	20	0	0			
Petty Charges, ...			...	1	4	0			
							779	12	3
BIBL. INDICA, ...	30	11	4						
Freight, ...			...	42	15	9			
Packing charges, ...			...	5	10	0			
Bullock train hire on two parcels of Bibl. Indica, received from Mr. R. Griffith, ...			...	4	7	0			
Printing 250 Copies of a Persian list of works for sale, ...			...	1	8	0			
Purchase of Postage Stamps, ...			...	5	0	0			
							59	8	9
COPYING PURAN.									
Copying Charges, ...			...			...	31	8	0
VEDANTA SUTRAS.									
Editing Charges, ...	36	8	0			...	186	10	8
TAITTIRIYA SANHITA.									
Editing Charges,...			...			...	1,150	8	0
TAITTIRIYA BRAHMANA.									
Printing Charges, ...	1,141	14	0			...	224	0	0
							2,579	12	4
BALANCE.									
Bank of Bengal, ...	11,166	11	11						
In hand, ...	25	15	8						
				11,192	11	7			
Inefficient Balance, ...				954	8	6			
							12,147	4	1
						Co.'s Rs.	14,727	0	5

E. E.
EDW. B. COWELL,
Secy. As. Society.

STATEMENT No. 3.

Assets.

CASH.	1858.			1859.		
Bank of Bengal, ... Rs.	3,442	3	5	2,796	14	3
Cash in hand, ...	9	8	10	9	14	9
Inefficient Balance, ...	1,578	3	9	72	0	0
Company's Paper, ...	5,000	0	0	5,000	0	0
	0,030	0	0	7,878	13	0
OUTSTANDINGS.						
Contributions, ...	5,409	5	3	4,607	5	4
Admission Fees, ...	64	0	0	192	0	0
Library Sale of Books, ...	178	8	0	212	0	0
Journal Subscription to end of 1857, ..	630	5	0	415	5	0
Ditto, for 1858-59, ...	0	0	0	1,000	0	0
Ditto, Sale of, ...	7	8	0	5	8	0
	6,289	10	3	6,432	2	4

The Asiatic Society's Rooms,
—The 31st December, 1859.

Examined.
BHOBANYPROSAD DUTT,
Offg. Asst. Secy.

Liabilities.

	1858.			1859.		
Hon'ble Sir J. W. Colvile, Kt., .. Rs.	276	8	0	276	8	4
J. W. Laidley, Esq., ...	418	7	4	418	7	0
Deposits, ...	58	0	0	90	11	0
Messrs. Williams and Norgate,, ...	0	0	0	1,383	2	8
Journal Nos. IV. and VI. of 1857, VI. of 1858 and II. to IV. of 1859 about,	0	0	0	1,600	0	0
Miscellaneous Printing, say about, ...	0	0	0	600	0	0
Printing Dr. Falconer's Catalogue of Fossils, ...	0	0	0	665	8	0
Mr. Theobald's Shell Catalogue, ...	0	0	0	300	0	0
Birds' Catalogue, (Binding,)	0	0	0	42	4	0
				5,376	9	0

E. E.
EDW. B. COWELL,
Secretary, Asiatic Society.

LIST OF ORDINARY MEMBERS

OF THE

ASIATIC SOCIETY OF BENGAL,

ON THE 31ST DECEMBER, 1859.

The * distinguishes non-subscribing and the † non-resident Members.

†Abbott, Lieut.-Col. J. Bengal Artillery, Lucknow.
†Alabaster, C. Esquire, China.
†Alexander, Lieut. W. G. 93rd Highlanders, Rohilcund Horse, Pillabheet.
*Allen, C. Esquire, B. C. S., Europe.
*Anderson, Lieut.-Col. W. Bengal Artillery, Europe.
Archer, C., Esq. M. D., B. M. S.; Calcutta.
Atkinson, W. S. Esquire, M. A.; Calcutta.
Avdall, J. Esquire, Calcutta.
*Baker, Lieut.-Col. W. E., F. G. S.; Bengal Engineers, Europe.
†Batten, J. H. Esquire, B. C. S., Mynpoorie.
†Bayley, E. C. Esquire, B. C. S., Allahabad.
†Beadon, C. Esquire, B. C. S., N. W. Provinces.
Beaufort, F. L. Esquire, B. C. S., Calcutta.
*Beckwith, J. Esquire, Europe.
*Benson, Lieut.-Col. R., Europe.
†Birch, Major Genl. R. J. H., C. B., N. W. Provinces.
*Bivar, Capt. H. S. 18th Regt. B. N. I., Europe.
*Blagrave, Capt. T. C. 26th Regt. B. N. I., Europe.
Blanc, Major S. J., H. M. 52nd Regt., Calcutta.
Blanford, H. F. Esquire, Geological Survey.
†Blanford, W. T. Esquire, Geological Survey.
†Blundell, E. A. Esquire, Singapore.
*Bogle, Lieut.-Col. Sir A. Kt., Europe.
Boloi Chund Singh Bábu, Calcutta.

†Bowring, L. B. Esquire, B. C. S.; N. W. Provinces.
Boycott, T. Esq., Bombay M. S., Calcutta.
*Brodie, Capt. T. 5th Regt. B. N. I., Europe.
Busheerooddeen Sultan Mahamed, Saheb, Calcutta.
†Calcutta, Right Rev. Lord Bishop of, N. W. Provinces.
†Campbell, A. Esq., M. D. Darjiling.
†Chapman, C. E. Esquire, B. C. S., Bijnour.
Chapman, R. B. Esquire, B. C. S., Calcutta.
*Colvin, J. H. B. Esquire, B. C. S., Europe.
Cowell, E. B. Esquire, M. A., Calcutta.
Crozier, William, Esq. B. M. S., Calcutta.
†Dalton, Capt. E. S. 9th Regt. B. N. I., Chota Nagpore.
De Bourbel, Capt. R., Bengal Engineers, Calcutta.
Dickens, Capt. C. H., Bengal Artillery, Calcutta.
Douglas, Major C., Bengal Artillery, Calcutta.
Drummond, Hon'ble E., B. C. S., Calcutta.
Eatwell, W. C. B., Esq. M. D.; F. L. S., Calcutta.
*Edgeworth, M. P. Esquire, B. C. S., Europe.
†Edmonstone, Hon'ble G. F., B. Lieut.-Govr. N. W. P., Allahabad.
*Elliott, Hon'ble Walter, M. C. S., Europe.
†Elliott, C. A. Esquire, B. C. S., Lucknow.
*Ellis, Major R. R. 23rd Regt. B. N. I., Europe.
*Elphinstone, Lieut. N. W. 4th Regt. B. N. I., Europe.
*Erskine, Major W. C., 73rd Regt. B. N. I., Europe.
Fayrer, J., Esq. M. D.; F. R. C. S., B. M. S., Calcutta.
Fisher, A. Esquire, Calcutta.
†Fitzpatrick, D. Esquire, B. C. S., N. W. Provinces.
†Forlong, Capt. J. G. R., Maulmein.
†Freeling, G. H. Esquire, B. C. S., Bolundshuhur.
Futteh Ally, Moulvie, Calcutta.
†Fytche, Major A., 70th Regt. B. N. I., Bassein.
Gardner, D. M. Esquire, B. C. S., Calcutta.
†Gastrell, Capt. J. E. 13th Regt. N. I. Serampoor.
†Geoghegan, J. Esquire, B. C. S., N. W. Provinces.
*Gladstone, W. Esquire, Europe.
Goodenough, F. A. Esquire, Calcutta.
Goodeve, E. Esq., M. D.; B. M. S., Calcutta.

Govinchunder Sen, Bábu, Calcutta.
Grant, Hon'ble J. P., Lieut.-Govr. of Bengal, Calcutta.
*Grapel, W. Esquire, M. A., Europe.
Grote, A. Esquire, F. L. S., B. C. S., Calcutta.
*Hall, F. E. Esquire, M. A., America.
Halsey, W. S. Esquire, B. C. S., Calcutta.
†Hamilton, R. Esquire, China.
*Hamilton, Sir R. N. E. Bart., B. C. S., Europe.
Hannyngton, Lieut.-Col. J. C., 63rd Regt. B. N. I., Calcutta.
Hardie, G. K., Esq. M. D., Staff Surjeon, Calcutta.
†Haughton, Capt. J. C., 54th Regt. B. N. I., Port Blair.
Hearsay, Major Genl. Sir J. B., K. C. B., F. L. S., Barrackpore.
†Henessey, J. B. N. Esquire, Mussooree.
†Herschel, W. J. Esquire., B. C. S., Shahabad.
*Hichens, Capt. W. Bengal Engineers, Europe.
†Hopkinson, Capt. H., 70th Regt. B. N. I., Moulmein.
†Ishurecpershad Singh Rajah, Bahadoor, Benares.
*Jackson, L. S. Esquire, Europe.
*Jackson, W. B. Esquire, B. C. S., Europe.
Jadava Krishna Singh Bábu, Calcutta.
*James, Capt. H. C. 32nd Regt. B. N. I., Egypt.
†Jerdon, T. C. Esquire, M. M. S., Darjiling.
*Johnstone, J. Esquire, Europe.
Jones, R. Esquire, Calcutta.
Joygopaul Bysack, Bábu, Calcutta.
†Kabeeroodeen Ahmed Shah, Bahadoor, Sassaram.
Kaliprusunno Singh, Bábu, Calcutta.
Kassinath Roy Chowdry, Babu, Cossipore.
Kay, Rev. W., D. D., Bishop's College.
*Laidlay, J. W. Esquire, Europe.
†Layard, Capt. F. P. 19th Regt. B. N. I., Berhampore.
Lees, Capt. W. N., L. L. D. 42nd Regt. B. N. I., Calcutta.
Leonard, H. Esquire, C. E., Calcutta.
*Liebig, G. Von, M. D., B. M. S., Europe.
Loch, G. Esquire, B. C. S., Calcutta.
*Low, Major Genl. J., Europe.
Lushington, F. A. Esquire, B. C. S., Rampore Beaulea.

†Maclagan, Capt. R., Bengal Engineers, Roorkee.
*Macleod, D. F. Esquire, B. C. S., Europe.
Macrae, A. C., Esq. M. D., B. M. S., Calcutta.
Manackjee Rustomjee, Esquire, Calcutta.
*Marshman, J. C. Esquire, Europe.
Mazzuchelli, Rev. F. F., D. D., Calcutta.
Medlicott, J. G. Esquire, Geological Survey.
*Middleton, J. Esquire, Europe.
*Mills, A. J. M. Esquire, B. C. S., Europe.
*Money, D. J. Esquire, B. C. S., Europe.
Money, J. W. B. Esquire, Calcutta.
†Morris, G. G. Esquire, B. C. S., Moorshedabad.
*Muir, J. Esquire, Europe.
†Muir, W. Esquire, B. C. S., Allahabad.
†Murray, Lieut. W. G. 68th B. N. I., Rawul Pindee.
†Narendra Narian Bhupa, Maha Rajah, Kooch Behar.
†Nicholls, Capt. W. T. 24th Regt. M. N. I., Burmah.
Nundolala Bose, Bábu, Calcutta.
Obbard, J. Esquire, Calcutta.
Oldham, T. Esquire, F. R. S., F. G. S., Calcutta.
O'Shaughnessy, Sir W. B., M. D., F. R. S., Calcutta.
*Ouseley, Major W. R., Europe.
†Phayre, Lieut.-Col. A. P., Rangoon.
†Prasunnonath Roy, Rajah Bahadoor, Degaputti Rajshye.
Pratabchundra Siñha, Rajah, Calcutta.
Pratt, the Ven'ble Archdeacon, J. H., M. A., Calcutta.
*Prinsep, C. R. Esquire, Europe.
Prosonocoomar Tagore, Bábu, Calcutta.
Rádhánáth Sikdar, Bábu, Calcutta.
Rajendrá Dutt, Bábu, Calcutta.
Rajendralál Mittra, Bábu, Calcutta.
Ramánáth Tagore, Bábu, Calcutta.
Ramáprasad Roy, Bábu, Calcutta.
†Rámchandra Siñha, Rájá, Moorshedabad.
Rámgopál Ghose, Bábu, Calcutta.
Riddell, H. P. Esquire, B. C. S., Calcutta.
†Roberts, A. Esquire, B. C. S., Lahore.

Röer, E., Esq. Ph. D., Calcutta.
*Rogers, Capt. T. E., Europe.
†Russell, R. H. Esquire, B. C. S., Bancoorah.
†Russell, A. E. Esquire, B. C. S., Balasore.
Samuells, E. A. Esquire., B. C. S., Calcutta.
Sanders, J. Esquire, Calcutta.
†Saxton, Capt. G. H. 38th M. N. I., Cuttack.
Schiller, F. Esquire, Calcutta.
†Scott, W. H. Esquire, Dehra Dhoon.
Sherwill, Major, W. S. 66th Regt. B. N. I.; F. G. S.; F. R. G. S., Dum Dum.
†Sherwill, Capt. J., Darjiling.
*Smith, Col. J. T., Europe.
Smith, Colonel R. Baird, C. B., F. G. S., Bengal Engineers, Calcutta.
Smith, H. Scott, Esquire, B. A., Calcutta.
†Spankie, R. Esquire, B. C. S., Saharunpore.
*Sprenger, Dr. A., Europe.
Stainforth, H. Esquire, B. C. S., Calcutta.
*Stephen, Major, J. G. 8th N. I., Europe.
Strachey, Lieut.-Col. R., F. R. S.; F. G. S.; F. L. S.; F. R. G. S.; Bengal Engineers, Calcutta.
†Strachey, J. E. Esquire, B. C. S., Moradabad.
†Stubbs, Capt. F. W. Bengal Artillery, Rawul Pindee.
†Sutherland, H. C. Esquire, B. C. S., Tipperah.
†Suttischunder Roy, Maharaja, Krishnagur.
Suttyasharana Ghosal, Rajah, Calcutta.
†Theobold, W. Esquire, Geological Survey.
*Thomas, E. Esquire, B. C. S., Europe.
Thomson, T., Esq. M. D.; F. R. S.; F. L. S.; F. R. G. S; F. H. S., Botanical Gardens.
†Thornhill, C. B. Esquire, B. C. S., Allahabad.
Thuillier, Major, H. L.; F. R. G. S.; Bengal Artillery, Calcutta.
†Tickell, Major, S. R., 31st B. N. I., Moulmein.
Trevor, C. B. Esquire, B. C. S., Calcutta.
Tytler, Major, R. C., 38th Regt. B. N. I., Barrackpore.
†Ward, J. J. Esquire, B. C. S., Cuttack.
Warrand, R. H. M. Esquire, B. C. S., Calcutta.

*Watson, J. Esquire, B. C. S., Europe.
†Waugh, Col. A. S., F. R. S.; F. R. G. S; Bengal Engineers, Dehra Dhoon.
Wells, Sir Mordaunt, Kt., Calcutta.
Williams, F. Fisk, Esquire, Calcutta.
†Wilmot, C. W. Esquire, Pakour, Sontal Pergunnahs.
†Willsone, W. L. Esquire, Beerbhoom.
Woodrow, H. Esquire, M. A., Calcutta.
†Wortley, Major, A. H. P. Stuart, Indore.
Young, Lieut.-Col. C. B., Bengal Engineers, Calcutta.
†Yule, Lieut.-Col. H., Bengal Engineers, N. W. Provinces.

ELECTIONS IN 1859.

Ordinary Members.

C. Alabaster, Esq., China.
Maha Rajah Suttis Chunder Roy Buhadoor, Krishnagur.
Major A. H. P. Stuart Wortley, Indore.
H. Stainforth, Esq., B. C. S., Calcutta.
Bábu Kassy Nauth Roy Chowdry, Cossipore.
H. Scott Smith, Esq., B. A., Calcutta.
W. Theobald, Esq., Jr., Geological Survey.
Lieut. W. G. Alexander, 93rd Highlanders, Pillibheet.
Capt. F. W. Stubbs, Bengal Artillery, Rawulpindee.
Sir Mordaunt Wells, Kt., Calcutta.
Colonel R. Baird Smith, C. B., Calcutta.
Bábu Nundolala Bose, Calcutta.
The Right Rev. Lord Bishop of Calcutta, Calcutta.
E. C. Bayley, Esq. B. C. S., Allahabad.
Honorable G. F. Edmonstone, Lieut.-Govr. N. W. P.
Major R. C. Tytler, 38th Regt. B. N. I., Barrackpore.
R. H. M. Warrand, Esq., B. C. S., Calcutta.
Capt. J. E. Gastrell, 13th Regt. N. I., Serampoor.
C. W. Wilmot, Esq., Pakour.
Maha Rajah Narendra Narain Bhupa, Cooch Behar.
Bábu Boloi Chund Singh, Calcutta.
J. Obbard, Esq , Calcutta.
W. T. Blanford, Esq., Geological Survey.

W. H. Scott, Esq., Dehra Dhoon.
Lieut. W. G. Murray, 68th N. I., Rawulpindee.
J. B. N. Henessey, Esq., Mussooree.
A. Campbell, Esq. M. D., Darjiling.
Capt. J. Sherwill, Darjiling.
Capt. H. Hopkinson, 70th Regt. B. N. I., Moulmein.
A. E. Russell, Esq., C. S., Balasore.
W. L. Willsone, Esq., Beerbhoom.
Rev. F. F. Mazuchelli, D. D., Calcutta.
Major S. J. Blane, H. M. 52nd Regt., Calcutta.
J. Geogeghan, Esq., N. W. Provinces.
E. Goodeve, Esq. M. D., Calcutta.
Major C. Douglas, Bengal Artillery, Calcutta.
R. Jones, Esq., Calcutta.
D. M. Gardner, Esq., B. C. S, Calcutta.
Capt. J. G. R. Forlong, Moulmein.
L. B. Bowring, Esq., B. C. S., N. W. Provinces.
Capt. J. C. Haughton, 54th Regt. B. N. I., Port Blair.
C. Archer, Esq. M. D., Calcutta.
D. Fitzpatrick, Esq., B. C. S., N. W. Provinces.
G. K. Hardie, Esq., M. D. Staff Surgeon, Calcutta.
A. Fisher, Esq., Calcutta.
Major S. R. Tickell, 31st Regt. B. N. I., Moulmein.
J. Sanders, Esq., Calcutta.
C. A. Elliott, Esq., B. C. S., Lucknow.
The Honorable J. P. Grant, Lieut.-Govr. of Bengal, Calcutta.
Moulvie Futteh Ally, Calcutta.
F. Fisk Williams, Esq., Calcutta.
F. A. Goodenough, Esq., Calcutta.
H. Leonard, Esq., C. E., Calcutta.

Corresponding Members.

Dr. Max. Müller, Oxford, London.
Dr. P. Bleeker, Batavia.
Dr. H. Frederick, Batavia.

Honorary Member.

Right Hon'ble Sir James W. Colvile, Kt., Europe.

Loss of Members during the year 1859.

By retirement.

B. J. Colvin, Esq., B. C. S., Calcutta.
Rev. W. O. Smith, Calcutta.
Dr. D. T. Morton, Tounghoo.

By death.

Lieut.-Col. M. E. Loftie, Nuseerabad.
Adolphe Schlagintweit, (Corresponding Member,) Thibet.
Sir G. T. Staunton, Bart. F. R. S., (Honorary Member,) London.

List of Honorary Members.

M. Garcin de Tassy, Membre de l' Instit, Paris.
Sir John Phillippart, London.
Count De Noe, Paris.
Prof. Francis Bopp, Memb. de l' Academie de Berlin.
Sir J. F. W. Herschel, F. R. S., London.
Col. W. H. Sykes, F. R. S. Do.
Prof. Lea, Philadelphia.
Prof. H. H. Wilson, F. R. S., London.
Prof. C. Lassen, Bonn.
M. Reinaud, Memb. de l' Instit. Prof. de l' Arabe, Paris.
Dr. Ewald, Gottingen.
His Highness Hekekyan Bey, Egypt.
Right Hon'ble Sir Edward Ryan, Kt., London.
Prof. Jules Mohl, Memb. de l' Instit, Paris.
Col. W. Munro, C. B., H. M. 39th Regt., London.
His Highness the Nawab Nazim of Bengal, Murshedabad.
J. D. Hooker, Esq. M. D., R. N., F. R. S., F. G. S., F. L. S., London.
Prof. Henry, Princeton, United States.
Lieut.-Col. Sir C. H. Rawlinson, K. C. B. Persia.
Lieut.-Col. Sir Proby T. Cautley, K. C. B., F. G. S., London.
Rájá Rádhákánta Devá Bahádur, Calcutta.
B. H. Hodgson, Esq., F. R. S., Europe.
H. Falconer, Esq. M. D., F. R. S., F. G. S., F. L. S., B. M. S., Europe.
Right Hon'ble Sir J. W. Colvile, Kt., Europe.

Corresponding Members.

Kremer, Mons. A. Von, Alexandria.
Porter, Rev. J., Damascus.
Schlagintweit, Herr H.
Schlagintweit, Herr R.
Smith, Dr. E. Beyrout.
Tailor, J. Esq., Bussorah.
Wilson, Dr., Bombay.
Nietner, J. Esq., Colombo, Ceylon.
Max. Müller, Dr., Oxford.
Bleeker, Dr. P., Batavia.
Frederick, Dr. H., Batavia.

Associate Members.

Blyth, E. Esq., Calcutta.
Káramut Ali, Syud, Matawalli, Hooghly.
Long, Rev. J., Calcutta.
MacGowan, Rev. J., Europe.
Stephenson, J. Esq., Europe.

For February, 1860.

At a meeting of the Society held on the 1st Instant.

A. Grote, Esq., President in the chair.

The Proceedings of the last meeting were read and confirmed.

Presentations were received—

1. From Dr. F. J. Mouat, a Jacket &c., worn by the Angami Naga Hill chief who killed the French Missionary.

2. From Dr. W. Hardinger of the Austrian Academy, several volumes of the Transactions of that Academy.

3. From the Secy. to the Royal Society of Sciences at Stockholm, Parts 1 to 5 of a Voyage round the world of the R. Swedish Frigate Eugenie.

4. From H. M. the Ex-King of Oudh, a dead monkey, *Presbytes Cephalopterus.*

5. From Mrs. Turnbull, a fine stuffed specimen of *Petaurus Sciaurus*, Shaw.

6. From J. J. Atkinson, Esq., a few Birds' skins procured at Singapore.

7. From Alex. Thomas, Esq., in medical charge of Khyuk Phyoo, Ramsee, Arakan, a fine specimen of *Platydactylus gecko.*

8. From F. E. Hall, Esq., an inscription stone found among the ruins of Pátan, a decayed city near Rátgurh in the Saugor district.

9. From Major R. R. W. Ellis (through F. E. Hall, Esq.,) a copper-plate land grant, dated in the year of Vikramáditya answering to A. D. 1097. This grant was translated by Mr. Hall in the Journal of 1858.

A letter was read from C. E. Chapman, Esq., desiring to withdraw from the Society.

The following gentlemen duly proposed at the last meeting were balloted for and elected ordinary members.

Col. E. W. S. Scott. Bengal Artillery.

Major G. Pearse.

Dr. F. J. Mouat, re-elected.

Capt. T. G. Montgomerie, B. E., F. R. G. S.

Mr. Robert Swinhoe and Rev. H. Baker were also elected corresponding members of Society.

The following gentlemen were named for ballot as ordinary members at the next meeting.

Dr. D. Brandis, proposed by Dr. Thomson seconded by Mr. Atkinson.

Sir H. Bartle Frere, K. C. B. proposed by Capt. Lees, seconded by the President.

H. S. Reid, Esq., Director of Public Instruction, N. W. P. proposed by Capt. R. Maclagan seconded by Mr. W. Muir.

Major J. Hovenden, Bengal Engineers, proposed by Capt. Stubbs seconded by Major Thuillier.

Major F. D. Atkinson proposed by Mr. Atkinson seconded by Major Thuillier.

Stephen Lushington, Esq., B. C. S. proposed by the President seconded by Mr. Samuells.

Capt. A. D. Turnbull, Bengal Engineers, Superintendent General Irrigation N. W. P., proposed by Lieut.-Col. A. S. Waugh, seconded by Capt. R. Maclagan.

H. B. Medlicott, Esq., F. G. S. Professor of Geology at the Thomason College, Roorkee, proposed by Capt. R. Maclagan, seconded by Mr. T. Oldham.

Lieut. H. Sconce, Assistant Commissioner Assam, proposed by Dr. Thomson seconded by Mr. Atkinson.

Rev. J. Cave Brown, proposed by the President seconded by Rev. Dr. Kay.

W. S. Fitz William, Esq., proposed by Mr. Atkinson, seconded by Mr. Schiller.

S. Wauchope, Esq., B. C. S., proposed by the President, seconded by Major Thuillier.

The Council Submitted the following report recommending that Professor Max Müller be elected an Honorary Member.

REPORT.

"The Council beg to recommend Professor Max Müller of Oxford for election as an Honorary member of the Society.

"For the last ten years no name has been more distinguished in Europe in connection with the ancient literature of India. His edition of the Rig Veda, with the commentary of Sáyánáchárya, (three volumes of which have appeared, containing five of the eight ashtakas,) is alone sufficient to win him a very high place among

Oriental scholars. He has also laboured successfully in the fields of comparative philology and mythology; and his paper on the latter subject in the Oxford essays has been translated into two of the continental languages.

"His last work which has only lately arrived in this country, on the "History of ancient Sanskrit Literature so far as it illustrates the primitive religion of the Brahmans," not only brings within the reach of the general reader, the results of the labours of various Orientalists, but it also abounds with new and interesting materials for future investigations. Of this kind is the chapter on the history of writing in India, which first appeared in the Society's Journal, the author having contributed it when he was elected a corresponding member in the February meeting of 1859."

The Council reported that they had appointed the following gentlemen as members of the Sub-Committees for the year 1860.

FINANCE.

Capt. C. H. Dickens.
Baboo Rajendra Lal Mittra.

PHILOLOGY.

E. A. Samuells, Esq.
Rev. J. Long.
Dr. E. Röer.
Capt. W. N. Lees.
Baboo Rajendra Lal Mittra.

LIBRARY.

E. A. Samuells, Esq.
Baboo Ramapersaud Roy.
Major R. Strachey.
Capt. W. N. Lees.
R. Jones, Esq.
Baboo Rajendra Lal Mittra.

NATURAL HISTORY.

E. A. Samuells, Esq.
T. Oldham, Esq.
Dr. T. Thomson.
Dr. W. Crozier.
W. Theobold, Esq.

Major R. Strachey.
H. F. Blanford, Esq.

METEOROLOGY AND PHYSICAL SCIENCE.

The Ven'ble J. H. Pratt.
Major H. L. Thuillier.
Major R. Strachey.
Baboo Radha Nauth Sikdar.
T. Oldham, Esq.

Communications were received—

1. From Baboo Radha Nauth Sikdar, an abstract of the Meteorological Observations taken at the Surveyor General's Office in the months of June, July, and August, 1859.

2. From R. B. Chapman, Esq., Under-Secretary to the Government of India, copy of a Statement of Doolum, a Convict in Port Blair.

Major Thuillier, F.R.G.S. informed the meeting that he had recently had the pleasure of receiving from the Messrs. de Schlagintweit now at Berlin, some excellent specimens of Chromo-Lithographs and Chromo-Photographs of their series of views of the most interesting subjects taken during the course of their magnetical survey of India. These pictures he placed on the Table for the inspection of members, the smaller ones being described as Chromo-Photographs and the larger as Chromo-Lithographs.

It was proposed by the Messrs. de Schlagintweit to produce a collection of no less than 700 Panoramas and views from India and High Asia, the aquarells and drawings from nature by Hermann and Adolphe de Schlagintweit, with some Photographs by Robert de Schlagintweit, taken between the years 1854 to 1858.

These views of which a catalogue has been forwarded, are divided into 20 groups as follows:

Groups.		*Plates.*
1.	General Panoramic Views, 1 to	22
2.	Konkun and Western Dekhan, ...	45
3.	Bengal to Panjab, ...	73
4.	Khassia Hills and surrounding Plains, ...	89
5.	Central India, ...	110
6.	Eastern Ghats and Karnatik, ...	128

7.	Maissur and Nilgiris, ...	150
8.	Rivers, ...	200
9.	Trees and groups of Vegetation, ...	249
10.	Temples, Monumental Buildings, European Residences, ...	277
11.	Native Buildings, Bridges, Villages, &c... ...	353
12.	Panoramas from the Himalaya, Tibet and Turkistan,	354
13.	Eastern Himalaya, ...	412
14.	Western Himalaya, ...	469
15.	Guari, Khorsum, Central Tibet, ...	496
16.	Western Tibet and Karakorum (Muskta), ...	551
17.	From Ladak by the Karakorum and Kuenlun to Turkistan, ...	579
18.	Salt-lakes and Thermal springs, ...	598
19.	Snow-peaks and Glaciers, ...	646
20.	Indian Ocean to Egypt, ...	700

From the above, the meeting would observe that the series embraced a wide range of interest, and from the specimens on the Table, he (Major Thuillier) thought that the collection was well worthy of a place in the archives of the Society. He could not inform the meeting what the probable cost of the entire set would be, but he hoped the object would not be lost sight of. The catalogue shewed a long list of subjects which appeared to be of special interest to a Society like this and the superior and artistic manner in which such publications were brought out in Germany, rendered them valuable.

With respect to the Chromo-Photographs, he would read an extract from Mr. Hermann de Schlagintweit's letter to his address, dated the 9th November last.

"The three Photographs are aquarell fac-similes and reductions to one uniform size of our large originals. By a peculiar combination partly of tinted Paper, on which the Photographs are printed, and partly of colour put on, they resemble, as near as possible, our originals." And as regards the larger pictures, he states:

"The objects of the Chromatic Lithographs are the two highest Peaks till now measured, which we thought to be of particular interest for you, our atlas will consist of 80 similar Plates." These two views the meeting would observe, represented the celebrated moun-

tains called "Kanchinjinga" and "Mount Everest" the former being 28,156 feet and the latter 29,002 feet above mean sea level. To the latter Mr. de Schlagintweit had added the name of "Gourisanker," a name which he (Major T.) did not remember to have before heard. It would be in the recollection of the Society that there was a very animated discussion some time back on the subject of the native or local appellation of this stupendous mountain, and that Mr. Brian Hodgson had affixed to it the name of "Deodhunga." It had been very clearly shewn to the Society, by his friend Colonel Waugh, how impossible it was for any person, without entering Nipal and conducting measurements there in the vicinity of the great snowy mass in question, to identify the peak which he had, after years of research and computation, fixed by actual observation, and declare it to be one and the same. For this reason he had therefore maintained his right to assign to the highest known mountain in the world, until its own native designation could be established beyond all doubt, a distinguished modern name, which had met with entire approval from the Royal Geographical Society at home, as well as with scientific men on the continent, and which, no doubt, would now be inseparably connected with the mountain for generations to come.

Mr. de Schlagintweit had made no allusion to the point, and it was therefore not known from whence he had obtained the name of "Gourisanker" or from what authority he had deduced it. Probably he had been able to derive information on this important subject when he visited Katmandhoo from which place also, it was most likely the view was taken, although this was not specified on the picture, a point to be regretted, looking to the discussions which had taken place and to the great interest which attached to the subject.

Major Thuillier also informed the meeting that Mr. de Schlagintweit's letter stated that the King of Bavaria whose subjects they were, had been pleased to confer on both brothers, titles of nobility, a distinction which they believed they owed to their important Mission to India and to the liberal views and arrangements with which the Indian Government at all times assisted them in completing it.

Major Douglas exhibited a calculating machine, and explained the

principle on which it was constructed, and the mode in which various arithmetical operations were effected by it.

The thanks of the meeting were voted to Major Thuillier and to Major Douglas.

The Officiating Librarian submitted the usual monthly report.

LIBRARY.

List of accessions to the Library since the meeting in January last.

Presentations.

Journal of the Academy of Natural Sciences of Philadelphia, New Series, vol. IV. Part 1.—BY THE ACADEMY.

List of Fellows of the Royal Society for 1858.—BY THE ROYAL SOCIETY.

Address of the President delivered at the Anniversary Meeting, 30th November, 1858.—Ditto.

Zwei Vedische Texte über Omenà und Portenta. Von. A. Weber, Berlin, 1859.—BY THE AUTHOR.

1. Jahrbuch der Kaiser-Koniglichen, Geologischen Reichsanstalt vols. VII. VIII. and IX. *Vienna.*—BY THE SOCIETY.

List of members of the Royal Asiatic Society, 1858.

Report of the Joint Committee of the Royal Society and the British Association for procuring a continuance of the Magnetic and Meteorological Observatories.

2. Uebersicht der resultate Mineralogischer Forschungen from 1844 to 1852, 3 vols. Von. Dr. Gustav. Adolph. Kenngott.

3. Katalog der Bibliothek des K. K. Hof—Mineralien—Cabinets in Wien.

4. Abhandlungen der Mathemat, Physikalischen Classe der Köeniglich Bayerischen Akademie der Wissenschaften, vols. 30, 31, *München.*

5. Ditto Historischen Classe, vol. 32.

6. Ditto Philosoph Philologischen Classe, vol. 3rd Parts 1, 2 and 3.

7. Naturwissenschaftliche Abhandlungen, Von Wilhelm Haidingèr, Bands 1, 2 3 and 4.

Auszug aus dem Monatsbericht der Koniglichen Akademie der Wissenschaften Zu Berlin for January and February 1859, 2 pamphlets.

8. Gelehrte Anzeigen herausgegeben Von Mitgliedern der K. Bayer. Akademie der Wissenschaften Parts 42 and 47.

9. Berichte über die mittheilungen von Freunden der naturwissenschaften in Wien, Von Wilhelm Haidingèr, Parts 1 and 7.—*Wien.*

An unpointed Phonetic Alphabet based upon Lepsius' Standard Alphabet by J. G. Thompson, M. C. S. Mangalore 1859.—BY THE AUTHOR.

Oriental Christian Spectator for December, 1859.—By the Editor.

Calcutta Christian Observer for January, 1860.—By the Editors.

Oriental Baptist for January, 1860.—By the Editor.

1. A paper and Resolutions on the Uniform System of Meteorological Observations.—By Major R. Lachlan.

2. Journal of the Royal Geographical Society, vol. 27. 1858.

3. Zeitschrift der Deutschen Morgenländischen Gesellschaft Dreizehnter Band. 4th Heft, *Leipzig*, 1859.

The London, Edinburgh and Dublin Philosophical Magazine and Journal of Science, Fourth Series. No. 121, November, 1859.

4. Denkrede auf Johann Nepomuf von Fuchs. By Franz von Kobell, *München*. 1856.

5. Ueber die Physic der Molecularcräfte. By Prof. Dr. Jolly. *München*, 1857.

6. Wissenschaften altderetscher Sprache und Literatur. By Dr. Konrad Hoffman, *München*, 1857.

7. Die deutsche Politik König Heinrich I.—By Franz Loher, *München* 1857.

8. Francesco Petrarca's Vortrag.—By Prof. Georg Martin Thomas. M*ünchen*, 1858.

9. Ueber die geschichtlichen Porstufen der neueren Rechts philosophie. —By Prof. Dr. Carl Prantl. *München*, 1858.

10. Ueber Johannes Müller.—By Dr. Th. L. W. Bischoff. *München*, 1858.

11. Philosophical Transactions of the Royal Society of London, Parts, 1 and 2 of 1858.

12. Fisher's Mosaic account of the Creation.

13. Weber's Zwei Vedische Texte uber Omina und Portenta.

Purchased.

1. Le Bouddha et Sa Religion. By J. Barthelemig Saint-Hilaire, *Paris*.

2. Annales des Sciences Naturelles. By M. Milne Edwards and By M. M. A. D. Brongniart Et J. Decaisne. *Paris* 1859.

3. Revue des Deux Mondes, XXIX. Annee, Seconde Periode. *Paris* October 1859, and November 1859. Tomes XXIII. and XXIV.

4. Vergleichende Grammatik. Von Bopp. Zweiter Band Zweite *Hälfte*, *Berlin*, 1859.

5. Chalef Elahmar's Qasside. Von W. Ahlwardt. *Greifswald*, 1859.

6. Die Herabkunft Des Feuers und Des Göttertranks. Von Adalbert Kuhn. *Berlin*, 1859.

7. The Literary Gazette. Nos. 69, 70, 71, 72 of vol. 3rd.

8. Comptes Rendus Des Seances De L'Academie des Sciences. Tome 49. Nos. 12, 13, 14 and 15.

9. The Annals and Magazine of Natural History. No 23, November, 1859. *London.*

10. Haji Khalfa, a Biographical Dictionary of the Mahomedans, vol. 7.

For March, 1860.

The Monthly General Meeting of the Asiatic Society was held on the 7th instant.

A. Grote, Esq., President, in the chair.

The proceedings of the last meeting were read and confirmed :—

Presentations were received :—

1. From Rajah Kundurpeshwar Singh, Zemindar of Sarun, six gold coins of his predecessors of different sizes.

2. From the Bombay Government, No. 54, of the selections from its records.

3. From the Madras Government, No. 61, of the records of that Government.

4. From the Superintendent, Bombay Government Observatory, a copy of the Magnetical and Meteorological Observations made in 1858.

5. From M. Zill, a fragment of the egg-shell of the large Dodo-like bird of Madagascar, the *Æpiornis maximus. (J. Geofroy,)* an egg, beside which that of the Ostrich is comparatively diminutive, and which holds about two gallons.

6. Captain Eales, of the *Fire Queen*, S. V., a specimen of the *Chiloscyllium plagiosum, (Bennett,)* six feet in length, from the Aguada Reef, the "Sun-fish" of seamen in the Bay of Bengal, found only in shoal water.

7. Capt. Niblett, of the *Sydney* S. V. a small specimen of the curious crustacean, *Thalasina scorpionedes, (Leach)* forwarded by Mr. Voule of Rangoon, who remarks that "This is a land animal, which the Burmese call *Padzoon Kea* or 'scorpion prawn.' It does not live on the surface of the ground, but burrows to a depth of three or four feet in the mud. This specimen was found at that depth."

8. From Rajah Radha Kanth Deb, Bahadoor, a huge Sunkarra Fish (trygon).

Professor Max Müller, of Oxford, was balloted for, and elected an Honorary Member of the Society.

The following gentlemen duly proposed at the last meeting were balloted for and elected ordinary members :—

Dr. D. Brandis.
The Hon'ble Sir H. Bartle Frere, K. C. B.
H. S. Reid, Esq. B. C. S.
Major Hovenden.
Major F. D. Atkinson.
Stephen Lushington, Esq., B. C. S.
Capt. A. D. Turnbull.
H. B. Medlicott, Esq.
Lieut. H. Sconce.
Rev. J. Cave Browne.
W. S. Fitzwilliam Esq.
S. Wauchope, Esq., B. C. S.

The following gentlemen were named for ballot as ordinary members at the next meeting.

J. E. T. Aitchison Esq., M. D. proposed by Major F. W. Stubbs and seconded by Col. Baird Smith.

A. K. Dyer, Esq., proposed by Dr. T. Thomson, seconded by Mr. Atkinson.

H. Braddon, Esq., proposed by Mr. Atkinson and seconded by the President.

Alonzo Money, Esq., B. C. S., proposed by Mr. Atkinson, seconded by Mr. Samuells.

The Council also proposed Dr. M. Haug of Poonah, a corresponding member of the Society.

Col. Strachey suggested that a statement should be prepared and laid before the next meeting showing, as far as could be at present ascertained, the financial result of the recent reduction in the rate of subscription.

The Secretary said he should be most happy to prepare such a statement. He could at once state, that since the beginning of last year upwards of 70 new members had been elected.

Capt. Lees enquired what number had been elected in previous years.

The Secretary replied that the average of the three preceding years had been only nine.

Communications were received—

1. From Baboo Radhanauth Sikdar, abstract of the result of the Meteorological observations taken at the Surveyor General's office in the month of September, 1859.

2. From W. T. Blanford, Esq., a paper on the Indian Malacology, No. 1, by Messrs. W. T and H. F. Blanford.

3. From Major H. L. Thuillier, a paper by Capt. Montgomerie on the great flood of the river Indus which reached Attock on the 10th August, 1858.

4. From Col. R. Strachey a memo. on Mr. Blyth's paper on the animals known as wild asses.

Received the following letter from Major H. L. Thuillier :—

To W. S. Atkinson, Esq.,
Secy. Asiatic Society.

Sir,—I have the pleasure to return the Society's atlas of district lithographed maps which I have completed. After adding all the maps recently published, an index to the whole set has been prepared, the maps numbered, and an index map of Bengal prepared, which I hope will make the record more worthy of a place in the Society's library.

I would suggest that a separate volume of the *engraved* sheets of the Indian Atlas be prepared for the library. I should be happy to supply all the sheets published up to the present time from the Surveyor General's Office, and to arrange them with proper list and index map. The cost of the atlas will not be more than about 20 Rupees.

Your's obediently,
(Sd.) H. L. Thuillier, Major.

The hearty acknowledgments of the meeting were given to Major Thuillier for his liberal and valuable assistance in completing and arranging the Society's atlas.

His offer to furnish the engraved maps, as they were issued, was accepted with thanks.

Report from the Council.

The Council beg to submit for the approval of the Society the following report of the Philological Committee recommending the publication of *Zeeah Burneah* in the Bibl. Indica.

Report.

The Philological Committee recommend to the Council that the *Zeeah Burneah*, a Persian History of the reign of Firuz Shah Toghluk, should be published in the new series just commenced of the Bibl. Indica. Several MSS. have been collected to form an accurate text, and Moulavi Syud Ahmed Khan of Moradabad has offered to edit it. The work will fill about seven Fasciculi, and as it relates to a very important and but little known period in the history of Muhammadan India, and as the book itself is extremely rare, it appears to the Committee on every account desirable to have it printed.

The report was adopted.

The Council reported that they had addressed the following letter to the Supreme Government:—

From W. S. Atkinson, *Esq. Secy. Asiatic Society of Bengal,*
To W. Grey, *Esq., Secy. Govt. of India, Home Dept.*

Asiatic Society's Rooms, Calcutta, 27th Feb. 1860.

Sir,—I am directed by the Council to bring to the notice of the Honorable the President in Council the opportunity afforded by the present expedition to China of investigating the Physical Geography and Natural History of portions of that country to which access may hereafter be difficult or impossible.

2. The Council have felt so deeply the importance of not neglecting this opportunity, that they recently requested their President to ascertain the views of the Viceroy, but at that time it appeared to His Lordship that he would not be warranted in exposing a naturalist to such risk of life, as would be incurred by prosecuting Natural History researches in a hostile country.

3. Since that time considerable extension has been given to the force intended to operate in China, and it appears probable that posts must be established to serve as a basis for operations inland, in northern China, a country little known to naturalists and of very great interest.

4. A naturalist would thus be able either from on boardship or from the posts on the seaboard to make good collections and obtain valuable information, even if unable to accompany the force into the interior in whatever direction it may proceed.

5. The Council however venture to think that a naturalist would find it possible to accompany the advance of the army without serious danger, and they are further convinced that an equally good opportunity is not likely to occur again, and that it would hereafter be a matter for regret if no use were made of it; nor do they think it immaterial to add, in confirmation of their own views, that the French Government, as they have recently ascertained, has already dispatched a naturalist to the East to accompany the allied forces.

6. The Council have learnt from the public journals that attention has already been called to the subject at home, and they have reason to believe that H. M. Government have been addressed on the subject by leading men of science in England. They nevertheless feel it a duty to lay the subject before the Government here, because they believe that a man possessing special qualifications for such a task, by his previous studies and by his extensive knowledge of the Zoology of Asia, is present on the spot and ready to undertake the duties and the risk. Moreover, the name of Mr. Blyth, who has a high reputation in Europe, has been prominently put forward in the London *Times* and *Athenæum* as the gentleman best suited for such a commission.

7. The Council therefore, while fully appreciating the motives which influenced His Excellency in declining to entertain their proposal when first submitted to him, still venture to hope that the great importance of such a mission in a scientific point of view, the probability that so favorable an opportunity may not occur again, and the fact that Mr. Blyth is quite willing to encounter the danger, whatever it may be, may lead to a reconsideration of the question, and an affirmative decision.

8. The Council have given some attention to the matter of expense and think a personal salary of Rs. 500 with travelling expenses would be a fair remuneration.

In addition to this some allowance would be required to provide a staff of native taxidermists and collectors.

These might be procured partly in this country and partly in China.

I have, &c.,

(Sd.) W. S. Atkinson,

Secretary, Asiatic Society.

Mr. R. Jones previously to giving a microscopic domonstration of Diatomaceæ offered a few remarks descriptive of these organisms. They were described as a family of confervoid Algæ differing from other unicellular Algæ, in being furnished with an external coating of silex. The method of determining the structure of the Diatomaceous frustule was explained, and attention was directed to the singular beauty of the traceries and markings exhibited by the silicious valves and to the difficulty of making out their true condition. The mode of increase of the cells was stated to be, like that of all vegetable cells, a process of division—the only other mode of reproduction known certainly to exist in this class, being that in which the operation of conjugation takes place. It was remarked however that these phenomena required for their satisfactory demonstration quiet and a happy concurrence of other circumstances. It was further stated that the reproduction of Diatomaceæ, by the breaking up of the Endochrome into Gonidia, was doubtful. Various causes were mentioned as having been assigned to account for the motion observable in these organisms; but it was added that, our knowledge on this point was still very imperfect. The habitats of the Diatomaceæ were described, and numerous fossil specimens from the Himalayas, the Arctic regions, America, and various other localities, were exhibited during the evening; and it was mentioned, as an interesting fact, that the same species were found under conditions widely differing, and in places distantly remote from each other.

Dr. Crozier remarked that the description of the organization of the Diatomaceæ with which Mr. Jones had so ably favoured the meeting and the microscopic demonstrations which would now be given of them, both recent and fossil, were very interesting, especially as these minute organized beings have only very lately been brought to our knowledge by the valuable assistance our sense of sight receives from the compound achromatic microscope; and they were, though invisible to the naked eye, found wherever there is fresh or salt water—in.

the smallest quantity of water, on the surface or in the deepest fathomable part of the ocean, in the tropical and in the polar regions. Some recent Diatomaceæ in fresh water would be shown under the microscope, some from Atlantic soundings 2,070 fathoms, after which he, Dr. C., would exhibit some in a state intermediate between recent and fossil from guano, the urinary and fœcal excrement of sea-birds. The silicious cases of the Diatomaceæ which have been taken by the birds with their food, generally fish, who also have previously taken these Diatomaceæ as food, (most likely in eating seaweed on which they are always very abundant) were not acted upon at all by the alimentary secretions but passed out with the fœces unaltered; besides which they were found in innumerable numbers in many strata of the earth in different localities, some of which would also be demonstrated. From their numbers both recent and fossil, and their peculiar indestructible and often beautifully formed silicious cases they were a very interesting study, besides which, though their remains were so permanently preserved for an almost indefinite time, owing to their indestructible silicious cases, they were amongst the lowest organized beings, yet they possessed some motive power and have been placed by some naturalists in the animal kingdom. But this motive power in all of the lowest organized beings arose generally from cilia; now these peculiar incessant motive organs were found on some particular part of many of the lowest organized beings both animal and vegetable and therefore were not recognized now as the distinctive character of an animal. The Diatomaceæ were now placed in the vegetable kingdom as they do not possess any internal assimilating or digestive organs. The great distinction between the animal and vegetable kingdoms (which is very well marked in the higher organized plants and animals) in the lower organized beings was this, the *animal* requires for its nourishment, its life, matter organized either by its own or vegetable processes, which it takes some way or other into the interior of its body, the *vegetable* for its nourishment, its life, possesses the power of obtaining it by absorbing the inorganic elements on its exterior. Wherever any organized beings under the influence of sun-light were found to decompose carbonic acid and to set free oxygen they might be ranked in the vegetable kingdom, however active their motions may be from cilia or other unknown agents.

This peculiar power of vegetables was strikingly and instructively demonstrated to us in an aquarium ; put fish in an aquarium and they soon die, though they may be well fed, if the water is not renewed, and this mortality arises from want of oxygen ; but put a water plant in the aquarium and the fish will live for days weeks and months without the water being changed, and this arises from the peculiar power the vegetable possesses of decomposing carbonic acid, appropriating the carbon to its own life and giving off oxygen for the support of the life of the fish.

Mr. Jones and Dr. Crozier then exhibited numerous specimens of Diatomaceæ, several members of the society having obligingly lent their microscopes for the occasion.

The cordial thanks of the meeting were voted to Mr. Jones and Dr. Crozier.

The Officiating Librarian submitted the usual monthly report.

Library.

The Library had received the following accessions since the meeting in February last.

Presentations.

Journal of the Academy of Natural Sciences of Philadelphia, New Series, vol. 4th, Part 2nd.—By the Academy.

Proceedings of the Academy of Natural Sciences of Philadelphia, 1859.—By the Academy.

Description of some Asiatic Lepidopterous Insects belonging to the tribe Bombyces.—By Frederic Moore. (From the proceedings of the Zoological Society of London, May 1859.)—By the Author.

A Monograph of the Genus Adolias.—By Frederic Moore. (From the Trans. Ent. Society vol. 5, N. S., Part 2nd).—By the Author.

Synopsis of the known Asiatic species of Silk-producing Moths with descriptions of some new species from India, 2 copies.—By Frederic Moore. (From the proceedings of the Zoological Society of London, June 1859.—By the Author.

The Quarterly Journal of the Geological Society, vol. 15, Part 4, No. 60. —By the Editor.

Journal of the Statistical Society of London, vol. 22, Part 4.—By the Society.

Proceedings of the Royal Geographical Society of London, vol. 3, No. 6. —By the Society.

The Philosophical Magazine. Fourth Series, Nos. 122, 123, for December 1859.—By the Editors.

The Athenæum for November 1859.—By the Editor.

Calcutta Christian Observer for February and March 1860.—By the Editors.

Oriental Baptist for February and March 1860.—By the Editor.

Preliminary Map of India exhibiting the lines of Electric Telegraph in 1860.—By Major Thuillier.

Coal and Iron in the Punjab.—By the Public Works Department.

Report on the Survey Operations in the Lower Provinces.—By the Bengal Government.

Selections from the Records of the Bombay Government, No. 54, New Series.—By the Bombay Government.

Selections from the Records of the Madras Government, No. 61.—By the Madras Government.

Report on certain Projects.—Ditto Ditto.

Magnetical and Meteorological observations made in 1858.—By the Superintendent, Bombay Government Observatory.

Selections from the Public correspondence of the Punjab Government, vol. 4, No. 3.—By the Punjab Government.

Bibidharta Sangraha, No. 60, for Choit.—By the Editor.

Purchased.

Comptes Rendus. Tome 49, Nos. 16 to 23.

Tables Des Comptes Rendus of Tome 48.

Journal Des Savants for October 1859.

The American Journal of Science and Arts for November 1859.

Revue des Deux Mondes for 15th November and 1st Dec. 1859. 2 Nos.

Das Leben Muhammed's, vols. 3 and 4.—By Dr. Ferdinand Wustenfeld.

Lexicon Persico-Latinum—Fasciculi 6 of Part I and of Part II.

Mötanabbii Carmina cum Commentario Wahidii, Fasciculus 5.

Journal Asiatique, No. 54, of Tome 14.

Annales des Sciences Naturelles No. 4, of Tome 11, Fourth Series.

Revue de Zoologie, No. 10, 1859.

The Natural History Review, vol. VI. No. 4.

The Annals and Magazine of Natural History vol. 4, No. 24.

The Literary Gazette Nos. 73 to 76.

Darwin on the Origin of Species.

Sir Emerson Tennent's Ceylon.

Report of Curator, Zoological Department.

The following collections have been received:

1. R. Swinhoe, Esq., of H. M. Consulate, Amoy. Numerous specimens of mammalia and birds, and some in other classes, additional to the birds noticed in XXVIII, 280,—collected chiefly about Amoy, but some from Formosa; and among the latter the skull and horns of an undescribed Stag, of the *Elaphine* type of Deer, which cannot but be regarded as an interesting discovery.

MAMMALIA.

Macacus —— ? Skull of a young animal, sent as that of "the *small* Formosa Monkey." I am not aware that any species of Monkey has been described from that island; and the present specimen exhibits no special characteristic at so early an age, when the second true molars had not been developed. A Monkey of this genus (M. speciosus, F. Cuv.,) inhabits Japan. Mr. Swinhoe since writes—"The Macacus from Formosa must have been at least two years old. I procured him in spring and kept him alive for several months. I have one still alive, with an unmutilated tail, which I will send you as it is, and you will be able to form your own views of the species from the living animal. It is very difficult to get an animal of the kind with a full tail, as the Chinese are in the habit of docking the tail before Europeans can get hold of them. This is the small species and inhabits the camphor forests of the Formosa mountains. Its colour is grey with pale under-parts, and it has yellowish-brown eyes. The large species which frequents the rocks on the coast of Formosa, especially in the neighbourhood of *Sakow* or 'Ape's hill,' is about twice the size and rather darker in colour (both have rough coats), with redder face, and with two *bright* red callosities on the rump. This I take to be the Japanese animal, as also identical with the Monkeys found in the island of Lintin near Hongkong, but this only on conjecture. The small species stands about 2 ft. high, the larger about 3 ft. A sporting friend has lately gone over to Formosa, and having sent a stuffer with him, I hope to procure some of these animals."—*Qu.* Has the very short tail of M. speciosus, as figured by M. Fr. Cuvier, been docked of its natural proportions?—Again, Mr. Swinhoe subsequently writes—

"I have ascertained that the *large* Formosa Monkey is identical with the Japanese one, and it will therefore stand as M. SPECIOSUS. The small kind, which I am about to send you alive, is undoubtedly distinct and probably new. The large are found on the coast, the small in the forests of the interior of the island.*

NYCTICEJUS (?) SWINHOEI, nobis, *n. s.* I can find no description of a Bat at all applicable to this species; and can discover in the specimen no trace of upper incisors. It is rather a robustly formed Bat, with the alar membrane continued to the base of the toes; with unusually short linguiform tragus, and short anti-helix. Fur mostly straight and silky, even glossy above, but a little frizzled on the forehead and about the neck; its surface-colour on the upper-parts an umbre-brown with pale tips, below much paler and a little albescent; membranes dark, with numerous transverse stripes of minute hairs on the lower surface of the interfemoral; the extreme tip of the tail exserted. Head and body about $2\frac{1}{2}$ in. long, the tail $1\frac{1}{2}$ in.; expanse about 12 in.: length of fore-arm 2 in.; longest finger $3\frac{1}{2}$ in.; tarse $1\frac{1}{8}$ in.; hind-foot with claws $\frac{1}{2}$ in.; ears (posteriorly) about $\frac{5}{8}$ in. in the fresh specimen; tragus barely $\frac{3}{8}$ in. This with other species not expressly stated to be from Formosa, I conclude are from Amoy.

SCOTOPHILUS PUMILOIDES, R. F. Tomes, *Ann. Mag. N. H.*, XX. (1857), p. 228. After much consideration, I think this small species is correctly identified.

CANIS (FAMILIARIS). Skull of a short-faced Dog, from Formosa, *minus* the lower jaw and wanting several of the upper teeth.

C. (FAMILIARIS). Skull of another short-faced Dog, of smaller size, and similarly imperfect, from Amoy,—most remarkable for possessing no second true molar, nor space for its insertion.†

* The living monkey has arrived just as this sheet was going to press. It is a half-grown female, and differs in no respect (that I can perceive) from the common M. RADIATUS of the peninsula of India, except in being a shade or two darker in colouring, with a nigrescent wash on the face and ears.

† The Tiger is an occasional visitor in the island of Amoy. In a letter from Mr. Swinhoe, dated Nov. 21st, 1859, he writes—"I have, since my last, met with little of interest except a Royal Tiger of large size in a Chinese village. I attacked him at close quarters with a fowling-piece and made him bleed; but to avoid an awkward spring at me, I fell down a precipice and nearly killed myself. No assistance being at hand and the Chinese not daring to come near the beast, I need not tell you that I missed getting his skin. One was killed last year at Amoy, and I once bought a cub out of three that a Chinese had for sale, but I never met the brutes before in my rambles. I was out after specimens, and was not of course provided with ball; my stock being only shot and cartridges.

MUSTELA SIBIRICA, Pallas: *M. Hodgsoni*, Gray, *Ann. Mag. N. H.*, XI (1843), p. 118. A fine skin of a female, and an imperfect skull.

SOREX MURINUS (?), L.: *S. Swinhoei*, nobis, *J. A. S.* XXVIII, 285. The specimen formerly described was but half-grown, and has the surface-colour of the upper-parts much darker than in four adults now sent. In the young of S. MURINUS, Dr. Cantor states (*J. A. S.* XV, 191), that "the colour is more of a bluish grey, slightly mixed with brown on the back." In the young of our present animal, the

When I reflect on this adventure, it seems a wonder that I was not killed, but a sight of that *glossy striped skin* emboldened me to try the odds." I sincerely trust that my esteemed friend will admit "discretion" to be "the better part of valour" on any future similar occasion. He since writes (Jan. 5th)—"Tigers, I am told, are greatly increasing in the neighbouring high hills. The villagers report a number of lives lost; and numerous small cattle carried away."

Tigers appear to be very troublesome in the new Russian territory of the Amûr. "In the same places where the Elk is found, the Tiger prowls; and tho latter animal may be called quite common, its constant abode being there. I was informed by some Zolons, that there are always a great number of Tigers in the mountains on the opposite or Chinese side. During winter they cross the river and seize the horses of the Zolons, who hunt them at that time." *Journ. Roy. Geogr. Soc.* XXVIII (1858), p. 420. Again, p. 424. "The enquiries I made of those few Tunguses confirmed the fact of the Tiger being found all over the Hing-gan, especially at its central and lower parts. The population are accordingly prevented from hunting there, as the Tiger destroys their Horses, particularly during winter.*** The Tiger always follows the fresh tracks of the wild Boar, which constitutes its principal food."...And p. 440, "The inhabitants of both banks of the Usuri are employed in agriculture, which the extent and fecundity of their lands render very successful. They have bred cattle for cultivating their fields, but being often attacked by Tigers, it is very difficult to keep cattle in any number." *Vide* also Atkinson's *Siberia*, and Humboldt's notice of Tigers in Northern Asia in *Asie Centrale*. However, they do not quite range to America, albeit the poet Campbell places them on the banks of Lake Erie! "On Erie's banks where Tigers steal along." Nor to Africa; though Sir Walter Scott locates them in "Lybia!" *(Bridal of Triermain.)* The Russian Expedition employed on the Survey of Lake Aral, found them troublesome even there *in mid-winter!* (Vide *J. R. Geog. S.* Vol. XXIII, 95).

Here it may be remarked that Tigers appear to be fast multiplying in Pinang, where notices of the occurrence of this animal have several times appeared in the Journals from about the middle of 1859. In the Island of Singapore, where they are now so numerous and destructive, they made their first appearance five or six years after the establishment of the British settlement; and but three or four years ago, Dr. Oxley wrote—"The channel between Pinang and the main is two miles broad; and this has been sufficient to exclude the Tiger: for although there have been examples of individuals having crossed over, it has been in an exhausted state, and they have been immediately destroyed." Since this was written, the Tiger would appear to have fairly established itself on the island.

In another communication, dated Dec. 8th, Mr. Swinhoe notices two other species of FELIS. He remarks—"A wild FELIS is found in Hongkong marked like the domestic Cat, but much larger; and an animal known to Anglo-Chinese as the 'Tiger cat.'" From the description sent, evidently F. MACROCELIS, or F. MACROCELOIDES if this be distinct, or an animal very closely akin: a specimen is promised shortly.

brown of the upper-parts all but totally conceals the dark grey: in the adults the brown tips are much less developed, and there is scarcely any difference in colour above and below. The largest specimen (a skin) has the tarse $\frac{7}{8}$ in. A female skin in spirit measures about 5 in., with the tail nearly 3 in.; tarse *plus* $\frac{3}{4}$ in. Amoy.*

S. —— ? The young of a large species of Shrew, which at first sight might be deemed an *albino*, but on closer examination is seen to be of a very albescent grey colour, which is probably typical. Extremely doubtful as a *leucoid* variety of the preceding.

Sciurus castaneoventris, Gray, *Br. Mus. Catal.: Sc. griseopectus*, nobis, *J. A. S.* XVI, 873.

Mus decumanus, L.

M. flavescens, Gray. Not full-grown apparently.

M.——— ? A diminutive species seemingly; rather than the young of a Mouse affined to M. musculus; approximating the description of M. vagus, Pallas, only the tail is of the same length as the head and body. Entire length about 4 inches only; the tarse with toes $\frac{5}{8}$ inch, or decidedly long in proportion. Ear-conch as in M. musculus; but more clad with small hairs within. It is not desirable to name it from a single skin.

Cervus taiouanus, nobis, *n. s.*† The 'Spotted Deer' of China has been currently but vaguely identified with the Axis or 'Spotted Deer' of India; but I have long doubted the correctness of that identification. The question is completely decided, so far at least as the Deer of the island of Formosa is concerned—and I am tolerably sure that this is the (imported ?) 'Spotted Deer' of China,—by a skull now sent by Mr. Swinhoe, which belongs strictly to the *Elaphine* and not to the *Axine* group of Deer: being the smallest and southernmost in its distribution of that group, the northern tropic crossing the middle of the island, and the southern cape of Formosa lying in about the same

* I have since obtained what seems to be the same species from the vicinity of Calcutta; and Major Tytler assures me that he has several specimens collected at Barrackpore: but it seems distinct from a still darker Shrew sent from S. Malabar, my dubious S. viridescens, *J. A. S.* XXVIII, 285. More extensive comparison of the skulls, especially, is needed to determine the identity or non-identity of these Shrews from various localities satisfactorily. I had long been assured of the existence of a large black Shrew in Lower Bengal, which the natives imagine to be fearfully venomous!

† This name is suggested by Mr. Swinhoe, in reference to the island's name of Taiwan, *seu* Formosa.

parallel as our Bengal Sandheads. All that Mr. Swinhoe says of the animal is that "the Formosa Deer are of a reddish colour with white spots, and may probably be the Indian species." The spots, I suspect, indicate the summer coat of the animal, as in various other species more or less (*e. g.* our Indian *Bára-sing'ha* and Hog Deer, the European Fallow Deer, &c.), and are not permanent at all seasons as in the Axis.* Whether in the details of the skull, or in the ramification of the horns, there can be no hesitation about the affinities of the Formosan Deer. It has well developed upper canines, which are wanting in the Axis; and the same large round infra-orbital foramina as in C. ELAPHUS and its immediate congeners. The skull is indeed a diminutive of that of C. ELAPHUS: but while all the permanent teeth are complete and well worn down (far more so than in an Axis skull with fully developed horns), the horns might be supposed to indicate an immature animal, and their pedicles are elongated as in a two or three year old C. ELAPHUS! Either, therefore, the skull is that of an aged animal with declining horns, which is scarcely consistent with the condition of the frontal and other sutures (any more than with the length of the horn-pedicles, as compared with other species), or the horns may be supposed to represent the typical development, corresponding to that occasional in a young animal of the larger typical Stags! They are little longer than the skull, do not spread much, and incline inwards at the tips; are slender, and the branches or antlers are mere snags; there is no 'bez-antler,' as commonly in young C. ELAPHUS and constantly (?) in C. BARBARUS;† but the

* In a letter received as this was going to press, Mr. Swinhoe describes the animal in its winter vesture. "The Stag from the north I only know from hearsay. A species from Japan a neighbour has in keeping, and this I take to be true C. SIKA. Both are evidently distinct from the Formosan species, of which a fine male and female are lodged in quarters close to my house. A young male has just been shipped for Leyden. I give a few remarks as to the peculiarities of the living pair. They were too wild to permit of my taking exact measurements of them. The buck stands about 4 ft. from the forehead to the ground; the doe 3 ft. The buck has horns of about a foot long, with three anterior snags and one posterior. General tint reddish mouse-colour, with a black dorsal line from the shoulders to the tail, where it expands into the latter T (as it were), the buttocks beneath it and each side of the short tail being pure white. Inside of ears, base of the back of ears, under muzzle, throat, belly and inner thighs, also white. The top of the head is redder. Some long whitish hair on the throat and between the legs: a roundish tuft of long white hair on the outer side of each tibia. These last characters are more prominent in the buck."

† In the series of horns of C. ELAPHUS figured in Prof. T. Bell's 'History of British Quadrupeds,' the 'bez-antler' is omitted throughout!

beam is trifid, the first or lowest snag being *external* and inclining forward (representing the 'royal-antler'), beyond which the final division is transverse to the axis of the body. Extreme length of horn (measured by callipers) 13 in.; greatest distance of pair apart (measured externally) 11 in.; tips apart $7\frac{1}{2}$ in.; girth of beam, above frontal snag, $2\frac{5}{8}$ in.; length of skull, inclusive of lower jaw *in situ*, $10\frac{3}{4}$ in.; extreme breadth of orbits (posteriorly) $4\frac{3}{4}$ in.: upper series of molars 3 in.

There is a C. SIKA, Schlegel (*Fauna Japonica*, t. 17), from Japan, cited by Dr. J. E. Gray (*P. Z. S.* 1850, p. 228), and thus briefly noticed by him. "Dark brown; cheeks and throat rather paler; rump brown, without any pale spot; tail pale, white beneath; hair harsh; horns rather slender, with a basal and a medial snag, and a subapical internal one." This description of the horn suits very well the Formosan animal; but the size is unnoticed, which could hardly be were C. SIKA to be *comparatively* so small an animal as C. TAOUANUS, and it may be, judging from Dr. Gray's mode of describing the horn, that the *Elaphine* type of ramification is a degree more developed in the Japanese species. He does not, however, mention the age of the animal he describes; and it is quite possible that it may temporarily represent, at a certain age, the particular development of horn which in C. TAOUANUS is characteristic of maturity. The colouring described may very well be that of the winter coat of the little Stag of Formosa.*

* Mr. Swinhoe since writes—"A Stag has just arrived here from the north, and is in the possession of a gentleman next door to me. It stands nearly 3 ft. at the shoulder, has a short head, and horns about 10 or 11 in. long, shaped thus *** Its face and over the eyes are black, neck and ears blackish-grey. Median line of back black, blending on the sides with blackish chesnut. Legs black, getting grey towards the hoof. Tail and buttocks white." Pretty clearly the Siberian Roe, CAPREOLUS PYGARGUS, (Pallas). But what is the so called 'Roebuck' of the Amûr territory, noticed in the 'Journal of the Royal Geographical Society,' Vol. XXVIII, 397 (1858) ?—CERVUS WALLICHII, or a kindred species? "The Roe-buck," we are told, "is an animal resembling the Elk, but has a smaller body, although the head is comparatively larger [!] Its flesh is savoury and nutritious; but the principal value of this animal lies in its horns, which contain at a certain period of the year—I think in March—a marrow [!], of peculiar medicinal properties, which is highly prized by the Chinese, who at the best season of the year, pay as much as sixty roubles (9l. 10s.) for a pair of good horns," &c. &c. This animal is mentioned in addition to "the Elk," the common Roe, and others.

Further particulars of the Chinese Deer have again since been received from Mr. Swinhoe, dated Dec. 8th, 1859. "The skull I sent you," he remarks, "was that of an elderly buck, one of a pair in the possession of a gentleman here. It died

Cervulus Reevesii, (Ogilby). The small Chinese Muntjac. A skull with horns.

Manis pentadactyla, L. Skull and flat skin. This particular species of Pangolin has long been identified as an inhabitant of China, and was obtained by Dr. Cantor in Chusan.*

while in his care, and its skin was so worthless that I did not keep it. The doo is still alive and in good health, and from her personal appearance I observe that your surmise as to the summer duration of the white spots is quite correct. She has already *nearly* lost all the white marks. I hear that there are several more of the same species, in the possession of a Mandarin here, and I intend shortly visiting him to inspect them. As far as I have yet ascertained, the species is purely Formosan. A larger Stag replacing it in Shantung and North China with large branching horns, and having a redder coat [*i. e.* summer vesture]. This other species I am assured is also found in Formosa, but this requires confirmation. The small Muntjac (Cervulus Reevesii), 'kina' of this dialect, is abundant in Formosa, having myself met with it there and seen skins. The other Deer-skins shewn me on my tour *round* Formosa were all of the spotted species. You say that no *Kiaphine* Deer are found [in India] south of the Himaláyas. Let me remark that this Deer is from Formosa, where I have seen mountains *covered with snow in summer;* and it is most probable that these animals are sold by the savages to the Chinese settlers, as in our inland tour over the hills for some 40 miles we met none, and the Chinese spoke of them as coming from the mountains, and of their skins as forming articles of barter.

"We have a Japanese Deer at Amoy with horns short and *somewhat* like those of the Formosan. It is not so elegant as mine, shorter in the legs, about the same height, and of a far more *Stag* aspect. This I doubt not is the C. sika of Schlegel, but what our large northern Stag can be I have not had the opportunity to ascertain. There are a few of the horns of the Formosan species to be got, which I will try to procure for you."

* The Chinese, like the natives of India, class the Pangolin as a fish, and it is curious that both people approximate it to certain Carps. Thus in India this animal is known as the *Jungli-mátch* (Jungle-fish), or *Bán Rohi* (Jungle Rohi), in reference to the Rohita vulgaris, or *Cyprinus rohita* of B. Hamilton. In some amusing notices of Chinese Natural History, published in the 'Chinese Repository' for 1838, we find the Pangolin thus described (p. 48). "The *ling-le*, or 'Hill Carp,' is so called, says the *Pun Tsaou*, because its shape and appearance resembles that of the *le* or Carp; and since it resides on land, in caves and hills, it is called *Ling*, a character compounded of *yu* fish, joined to the right half of *ling*, a high rocky place. It has by some been termed the *Lung-le*, or 'Dragon-carp,' because it has the scales of the Dragon; and by others *Chuen shan kéas*, or 'boring hill-scales,' because it is the scaly animal that burrows in the hills: the last name is the one by which the creature is best known among the people of Canton. An ancient name is *Shih ling yu* or 'stony hill-fish,' given to it because the scales on its tail have three corners like the *ling kéa*, or 'water calthrops,' and are very hard. This animal, for which the Chinese have as many synonyms as some anomalous Perch or *Hedysarum*, is the Manis, Pangolin, or Scaly Ant-eater, and is often seen in the hands of the people of Canton, by whom it is regarded as a very curious 'muster.' They consider it as 'a fish out of water,' an anomaly irreconcilable with any classification; and in the standard treatises on Natural History, it is placed among the Crocodiles and fishes." Further details are given; but I pass to an amusing description of this animal by the old Dutch traveller Linschoten, translated into quaint old English. He, too, describes it as "a strange Indian fish," caught in the river of Goa,—"the picture whereof, by commandment of the Archbishop of that city was painted, and for a wonder sent to the king of Spaine." He says:—"It was in bignesse as great as a middle-

sized Dog, with a snout like a Hog, small eyes, no eares [the particular species has a small ear-conch], but two lobes where his eares should be ; it had foure feete like an Elephant, the tayle beginning somewhat upon the backe, broad and then flat, and at the very end round and somewhat sharpe. It ranne along the hall upon the floore, and in every place in the house snorting like a Hog. The whole body, tayle, and legs being covered with scales of a thumbe breadth, harder than iron or steel [!]. We hewed and layed upon them with weapons, as if men should beate upon an anvill, and when we strooke upon him, he rouled himself in a heape, head and feet together, so that he lay like a round ball, we not being able to judge whether he closed himself together, neyther could we with any instrument or strength of hands open him againe, but letting him alone and not touching him, he opened himself and ranne away, as I said before."

So little is known of the mammalia of China that any contribution on the subject is of interest to zoologists. There is an animal known at Shanghai as the 'Musk Cat,' which I suspect is a species of Marten unknown to naturalists. It is thus described :—

" A beautiful animal, of about the size of the common Cat, but longer in form ; in fact, somewhat resembling the Marten, with a long bushy tail, like the brush of a Fox. Emits an exceedingly powerful and by no means disagreeable musky odour. Lives in holes of the ground, and also climbs into trees and bushes in search of birds and their nests. Exceedingly destructive to the Pheasants (PHASIANUS TORQUATUS) when sitting ; and is much hunted by the natives for its fur." *Bengal Sporting Magazine, n. s.* II, 642 (1845). Probably identical with the " large Marten" of the Amûr territory noticed in *Journ. Roy. Geogr. Soc.*, XXVIII (1858), p. 424.

Again, in the bird class, there is a Chinese Bustard well known to sportsmen from Amoy and also to the northward, but which has not yet been systematically described, so far as I can learn. The following is a notice of it from the same paper, p. 529.

" A species of Bustard, somewhat like the common mottled English Turkey, only smaller. These birds are generally found singly, at least during the time we were there (November and the winter months being the season in which we beat for them) : they are exceedingly shy and difficult of approach, and are usually found in the long grass and fir-clumps : they seem to rise with difficulty, running a considerable distance preparatory to their taking wing, during which time they call and cackle, which seems extraordinary, as they are generally found as odd birds." Mr. Swinhoe is well aware of the existence of this Bustard, but hitherto has been unable to procure a specimen, on account of the estimation in which it is held for the table.

For the same reason, comparatively few skins of Bustards are preserved anywhere, especially of the larger species ; and so it happened that the Great Bustard of Australia, though met with even by Cook and repeatedly mentioned by Flinders and other early navigators, remained unknown to European naturalists until Mr. Gould's visit to that country ! Capt. Cook, it may *not* be remembered, on his first voyage, proceeding northward from Botany Bay, landed a second time on the continent of Australia, a little to the south of the Tropic of Capricorn, and there he shot " a kind of Bustard weighing 17 lbs.," and named the landing-place *Bustard Bay !*

From a notice published in the 'Journal of the Royal Geographical Society,' Vol. XXVIII, 148 (1858), it appears that—" Of birds, the black and the white Cockatoos, bronze-winged Pigeons of various kinds, and the Bustard (or 'wild Turkey' of the colonists), were all found in the valley of the Victoria, but they were all much smaller than their kindred of the south." Probably, therefore, distinct species, according to the common acceptation of the phrase, or such as would be figured as different species by Mr. Gould.

In a collection of Chinese paintings of birds, among numerous species at once recognisable, was one of a very fine BONASA or 'Ruffed Grouse,' as yet undescribed. The collection referred to was taken to England by the late Viscount Hardinge.

AVES.*

Circus —— ? Female. Affined in general appearance to C. æruginosus, but apparently distinct. Mr. Swinhoe writes—"I have at last succeeded in procuring what I take to be the male of this species, bluish-grey on the wings and white on the under-parts with a few streaks. C. cyaneus is also common with us.

Buteo vulgaris, Beehstein; *B. vulgaris*, var. *japonicus*, Temminck and Schlegel (apud Swinhoe), though why so distinguished I cannot perceive.

Milvus melanotis; *Haliaëtus melanotis*, Gray, Hardw. *Ill. Ind. Zool.* Like M. govinda, Sykes, but having a stouter beak, and the plumage of the *mature* bird marked with pale streaks on the upper-parts.

Cypselus —— ? Like C. affinis, Gray, of India, but with the crown and tail conspicuously blacker, and the tail distinctly subfurcate.

Corvus sinensis, Gould; Horsfield, *Ind. Mus. Catal.*, II, 556. Exceedingly near to the common C. culminatus, Sykes, of India, Burma, and the Malayan peninsula, but decidedly larger, and I now doubt if either can be correctly identified with C. orientalis, Eversmann, of Middle Asia.†

* For other Chinese birds sent, vide Vol. XXVIII, p. 280.

† C. orientalis is thus distinguished by Prof. Eversmann from the European C. corone, of which latter the late Dr. Horsfield notes in his Catalogue two specimens from Pushut, and also C. cornix from Mesopotamia and Afghánistán!

"Corvus corone. *Cærulco ater, rostro modice acuminato, lineâ elevatâ horizontali infra nares, tomium in rostri medio attingente.*

"Corvus orientalis. *Cærulco-ater, rostro valido, crassiusculo, incurvo, tomiis continue involutis, mandibulari apice recto, spatio inter nares et tomium maxillare rotundato, lævi.*

"*Exemplaria mea circa fluvium Narym, ultra oppidam Buchtarma, occisa sunt.*" (*Addenda ad celeberrimi Pallasii Zoographiam Rosso-asiaticum. Fasciculus* II, *A. D.* 1841.)

Over India generally and Ceylon, we have only C. culminatus and C. splendens; the latter found exclusively where there is a considerable human population. It is only of late years that C. splendens has found its way into Arakan; but in Pegu there is a black race of it, and a nearly black race of it in Ceylon. Mr. F. Moore, however, describes a C. tenuirostris from Bombay. "Plumage above glossy purple-black, palest on the head, neck, back, and body beneath, and these having an ashy cast; forehead jet-black, and contrasting with the ashy cast of plumage of the crown. Length 18 in.; of wing 12½ in.; tail 7 in.; bill to gape 2⅝ in.; and tarse 2¼ in."

C. culminatus we have received from Malacca, where it co-exists with C. macrorhynchos, Vieillot, a species with remarkably long and slender bill, measuring 2¾ in. to gape; and this again appears to differ from C. enca, Horsfield,

C. TORQUATUS, Cuv.: *C. pectoralis*, Gould, *P. Z. S.* 1836, p. 18; *C. dominicanus*, Bonap.; *C. dauricus* apud G. R. Gray, *Gen. Birds*, II, 315.

PICA MEDIA, nobis: *P. sericea*, Gould.

PARUS MINOR, Temminck and Schlegel (figured in Gould's 'Birds of Asia'). Like P. CINEREUS, Vieillot, but with green on the fore-part of the back.

LEUCODIOPTRON CANORUM, Schiff.; *Turdus canorus*, *T. sinensis*, et *Lanius faustus*, L.; *Garrulax sinensis* apud Gray, nec *G. chinensis*, nobis, Catal. No. 483, which is a Tenasserim species, doubtful if likewise inhabiting China. Fowchow.

GARRULAX PERSPICILLATUS, (Gm.)

TEMENUCHUS CINERACEUS, (Tem.)

PASSER MONTANUS, (L.), var. Although alike in size and markings, specimens of this bird from different regions are readily distinguishable. The British are much darker ashy underneath, like P. DOMESTICUS as compared with its Indian representative; those from Arakan are considerably more rufous on the back; while the Chinese race is simply whiter underneath than the European. The Sikhim race, if I remember rightly, resembles the Chinese one; while specimens from Singapore and Java are probably like those from Arakan. I have never seen this bird from the N. W. Himaláya; and the Afghân P. MONTANUS of Capt. T. Hutton proved to be P. SALICICOLUS (v. *hispaniolensis*). Nevertheless, in Dr. Horsfield's Catalogue, examples of the present species are noted from Kandahar.

EUSPIZA PERSONATA, (Tem.) Specimen of a female.

ALAUDA GULGULA (?), Franklin; *A. cœlivox*, Swinhoe, 'Zoologist,' p. 6723 (1859). I have only recently seen the true A. MALABARICA, Scopoli, from S. India, which differs from A. GULGULA of Bengal and

of Java, according to Mr. F. Moore's description and admeasurements of the latter.

In the N. W., the true British Raven (C. CORAX) is common in the Punjáb and Afghánistán; but is replaced by a still larger race in Tibet, the C. TIBETANUS, Hodgson. In Peshâwur, Kohât, Afghánistán, and Kashmir, the European Rook (C. FRUGILEGUS) occurs; and in Kashmir also the European Jackdaw (C. MONEDULA); but the Chinese and Japanese Rook (C. PASTINATOR, Gould,) is distinct, and also the Chinese Jackdaw (C. DAURICUS, Pallas). The Hooded Crow (C. CORNIX) extends eastward to Afghánistán, and the European Carrion Crow (C. CORONE) to Pushut, as noticed in the text.

Upper India, by having a well developed pointed crest, as in the GALERIDÆ. An Amoy specimen approximates the true GULGULA.

MOTACILLA LUGUBRIS, Pallas (apud Swinhoe) : M. LUZONIENSIS in winter dress *apud nos, J. A. S.* XXVIII, 280 : but very like M. ALBA *(vera)* in winter dress.

LANIUS SCHACH, Gmelin.

DRYMOICA EXTENSICAUDA, Swinhoe, *n. s.*
PRINIA SONITANS, Swinhoe, *n. s.*
ORTHOTOMUS PHYLLORAPHEUS, Swinhoe, *n. s.*
CISTICOLA TINNABULANS, *n. s. (?)*

} These have been described by Mr. Swinhoe in an article on the birds of Amoy forwarded to the Society for publication.

MERULA MANDARINA, Bonap.

TURDUS RUFULUS, Drapiez *(T. modestus*, Eyton). Var. ?

T. DAULIAS, Tem. et Schl., *Fauna Japonica* (apud Swinhoe). To me this appears to be a mere variety of the last.

PETROCOSSYPHUS MANILLENSIS, (Gm.)

PRATINCOLA INDICA, nobis.

ERYTHROSTERNA LEUCURA, (Gm.)

ZANTHOPYGIA NARCISSINA, (Tem.) : *Z. chrysophrys*, nobis, *J. A. S.* XVI, 124. Male, differing from the female described *(loc. cit.)* by the much brighter and more flame-coloured tint of the yellow generally, which on the chin and throat is of a deep orange-colour; the difference, however, being far less than in the sexes of Z. TRICOLOR, (Hartlaub), v. *Z. leucophrys*, nobis, of the Malayan peninsula.

CURRUCA (?) CANTILLANS, Swinhoe.

ACROCEPHALUS MAGNIROSTRIS, Swinhoe, *n. s. : Salicaria turdina orientalis*, T. et Schl. (apud Swinhoe).

PHYLLOSCOPUS SYLVICULTRIX, Swinhoe, *n. s.*

PH. TENELLIPES, Swinhoe, *n. s.*

PERICROCOTUS CINEREUS, Strickland, fœm. Amoy.

PYCNONOTUS ATRICAPILLUS, (Vieillot), apud Lord A. Hay, *Madr. Journ.* XIII, pt. II, 160;* nec *Ægithina atricapilla*, Vieillot, which is another PYCNONOTUS from Ceylon, the *Sylvia nigricapilla*, Drapiez, *Rubigula aberrans*, nobis, *J. A. S.* XV, 287, XVI, 272, and *G. meropinus*, Bonap.,—Levaillant, *Ois. d' Afr.* pl. 140, where much too dully coloured). The Chinese species being *le Gôbe-mouche à tête*

* If I mistake not, *Muscicapa atricapilla* of Vieillot (nec Lin.)

noire de la Chine of Sonnerat, described *J. A. S.* XIV, note to p. 569, also *Hæmatornis chrysorrhoides*, Lafresnaye, *Rev. Zool.* &c. 1845, p. 367, and *P. hæmorrhous* apud Hartlaub, *Rev. Zool.* &c. 1846, p. 1. I have no means of determining upon which of the two species M. Vieillot first bestowed the name ATRICAPILLUS; but as both cannot bear it in the same genus, I propose to retain ATRICAPILLUS, (Vieillot), for the Chinese bird, and NIGRICAPILLUS, (Drapier,) for that of Ceylon.*

P. SINENSIS, (Gmelin): *Turdus occipitalis*, Tem.

ORIOLUS CHINENSIS, Gmelin.

HIATICULA PHILIPPINA, (Scopoli).

TRINGA ALPINA, L.; TR. SUBARQUATA, (Gm.), *apud nos*, XVIII, (280.)

BUPHUS CABOGA, (Pennant).

ARDEOLA SPECIOSA, (Horsfield, *vera*), in summer and winter dress.

ARDETTA SINENSIS, (Gm.)

LARUS FUSCUS, L.

L. KITTLITZII (?), Bruch: GAVIA KITTLITZII (?), Bonap.

THALASSEUS PELICANOIDES, (King): *Sterna cristata*, Stephens (nec Swainson); *St. velox*, Rüppell. Specimens from the Bay of Bengal, the Maldives, and from China, appear to be perfectly identical; and correspond, so far as can be adjudged, with Rüppell's figure.

ANOUS STOLIDA, (Gm.)

PODICEPS CRISTATUS, L. Winter dress.

P. MINOR, Gm. (or P. PHILIPPENSIS, Gm., if this be considered separable). Winter dress.

REPTILIA.

PYTHON MOLURUS, (L.) A flat skin, more than 13 feet long without the head, from Formosa!

BUNGARUS MULTICINCTUS, nobis, *n. s.* Another flat skin, obviously of a BUNGARUS, nearly affined to B. FASCIATUS, (Schneider); but the golden bands only one-sixth as broad as the black bands, and numbering more than fifty in a specimen 4 ft. in length *minus* the head.†

* The late Prince of Canino proposed the generic name MEROPIXUS for the Ceylon species.

† Mr. Swinhoe writes, Dec. 8th—"In Davis's 'China,' II, 333, mention is made of a *very* poisonous striped *black and white* Snake having reached England

MOLLUSCA.

A few marine and fresh-water shells, already in the museum with the exception of a small LYMNÆA and a minute PLANORBIS.

2. From E. L. Layard, Esq., on behalf of the Government Museum, Cape-town.

A fine collection of skins of mammalia and birds; those quite new to the museum being here distinguished by an asterisk prefixed.

MAMMALIA.

CYNOCEPHALUS PORCARIUS, (Bodd.) The Cape Baboon, or *Chacma*. Adult male.

*XANTHARPYIA HOTTENTOTA, (Tem.)

*MEGALOTIS CAAMA, (A. Smith).

*PROTELES CRISTATUS, (Sparrman). Tail wanting.

*GENETTA TIGRINA, (Schn.) 2.

*HERPESTES ICHNUEMON, (L.): *Ichn. Pharaonis*, Geoff.

*H. CAFFER, Wagner.

*H. PALUDOSUS, Cuv.: *Mangusta urinatrix*, A. Smith.

*FELIS SERVAL, Schreber.

*F. CAFRA, Desmarest.

*ZORILLA STRIATA, (Shaw).

*CHRYSOCHLORIS HOLOSERICEA, Licht.: *Chr. hottentota*, A. Smith.*

XERUS SETOSUS, (Forster).

*GERBILLUS AFER, Gray. 2.

*MUS PUMILUS, Sparrman. 2.

BATHYERGUS MARITIMUS, (Gm.) 3.

from Canton. This must be our BUNGARUS which you propose to name MULTICINCTUS. Its venom is indeed poisonous, and a gentleman at Swatow was nearly dying from the effects of the bite of one that had concealed itself in his room. It haunts sewers and chinks in the jetties and such places, where it subsists on Rats. It is not by any means common, but in very high tides the overflowing water often drives these animals from their holes and lurking-places; but they are difficult to procure as the natives are paid to attack them. It is called here the *Pivà-ke-ka* and *How-swanchwa* ('umbrella snake')." I should say, both from the name 'Umbrella Snake' and from the habits indicated, that a Cobra (NAIA) was intended; and, so far as I am aware, the nearly affined BUNGARUS FASCIATUS subsists entirely on other Snakes, of which it is a great devourer; hence it is styled *Ráj-sámp* by the natives of Bengal, as realizing their idea of the attributes and prowess of a ruler!

* A species previously in the museum, presented by Major W. S. Sherwill and considered heretofore as CHL. HOLOSERICEA, proves to be CHL. DAMARENSIS, Ogilby, *P. Z. S.* 1838, p. 5.

*Georhychus capensis, (Pallas).

G. cæcutiens, (Licht.)

*Lepus saxatilis, F. Cuv.

*L. capensis, L.

Hyrax capensis, Pallas.

Oreotragus saltatrix, (Bodd.). 'Klip-springer.'

*Calotragus melanotis, (Thunb.) 'Grys-bok.'

*C. tragulus, (Forst.) 'Stein-bok.'

*Eleotragus capreolus, (Thunb.) 'Rey-bok.'

*Cephalophus grimmia, (L.) apud Gray (*mergens*, Blainville). 'Duiker-bok.'

*C. monticolus, (Thunb.) 'Blau-bok.'

Orycteropus capensis, Geoffroy. 'Aard-vark.'

AVES.

*Serpentarius secretarius, (Scop.)

Tinnunculus rupicolus, (Daud.) 2.

*Buteo jackal, (Daud.) 2.

Bubo (?) maculosus, (Vieillot). Identical in species with the Somâli specimen correctly referred to *Bubo (?) africanus*, (Tem.), in *J. A. S.* XXIV, 298, though very differently coloured. Mr. G. R. Gray notes this species both from S. and W. Africa.

Strix flammea, L.

Læmodon niger, (Tem.)

Turacus persa, (L.)

*Corvus capensis, (Licht.)

Pyromelana capensis, (L.) Male in winter dress.

Hyphantornis aurifrons, (Tem.)

H. ——— ? With yellow crown and under-parts, black forehead, cheeks, chin and throat; upper-parts greenish-yellow, with dusky striæ; wing-edgings whitish, forming two cross-bands. Wing $3\frac{1}{4}$ in.*

*Serinus canicollis, (Sw.), 2. 'Cape Canary.'

*Alauda magnirostris, (Stephens).

*Agrodroma sordida (? Rüppell). 2. Bill shorter and hind-

* Perhaps H. melanotis, (Lafresnaye), *Mag. de Zool.* 1839, pl. 7 (which I have not for reference); but not *melanotis*, (Sw.), which = personata, (Vieillot); nor *melanotis*, Guérin, *hodié* Guerini, G. R. Gray.

claw longer than in Rüppell's figure of his *Anthus sordidus*, the latter also rather longer than in specimens from Abyssinia and from the Punjab Salt Range *(vide J. A. S.* XXIV, 258). The latter are also a shade more rufescent, have less distinct pale supercilia, and the penultimate tail-feather has a well defined pale mark at tip, which is not the case with the Cape specimens.

Lanius collaris, L. 2.

Telophonus bacbakiri, (Shaw).

Merula olivacea, (L.)

Columba arquatrix, (L.) 2.

Æna capensis, (L.)

*Pterocles namaqua, (Gm.) 2.

Francolinus (Schloptera) afer, (Latham.)

Struthio camelus, L. Chick. Also imperfect skin of a superb wild-shot male, with head and neck, wings, and tail; the value of which at Cape-town is £5.

*Choriotis cristata, (Sc.): *Otis kori*, Burchell. Head of a specimen weighing 25 lbs. This is the largest of the Bustards, and is immediately congeneric with the great Bustards of India, Arabia, and Australia respectively. *Pauw* (or 'Peacock') of the Dutch colonists.

*Œdicnemus capensis, Licht.

Stephanibis coronata, (L.).

*Hoplopterus speciosus, (Wagler).

*Charadrius marginatus (?), Vieillot.

*Rhynchea capensis, (L.). By no means satisfactorily distinguishable from Rh. bengalensis.

Fulica cristata, Gm.

*Porzana nigra, (Gmelin).

*Larus (Gabianus, Bonap,) pacificus, Lath. Adult. Rather smaller than the Australian species figured by Gould under this name, and without (?) the black bar on the tail. Tail mutilated. The late Prince of Canino referred Gould's species to J. Georgi, King.

Phaëton æthereus, L.

*Phalacrocorax capensis, (Sparrman).

*Hypoleucus melanogenis, nobis, *n. s.* Very like H. varius, (Gm., *Ph. hypoleucos*, Gould), of Australia, but distinguished by its

black cheeks and crest-feathers $1\frac{3}{4}$ in. long. Wing $10\frac{1}{2}$ in. Tail 5 in. Bill to forehead $2\frac{1}{16}$ in. Foot 4 in. From the 'Crozettes.'

Chenalopex ægyptiaca, (Gm.)

Anas flavirostris, A. Smith (*A. Ruppelli*, nobis).

Querquerdula erythrorhyncha, (Gm.)

Podiceps cristatus, L.

Aptenodytes Pennantii, G. R. Gray.

*Chrysocoma catarractes, (Gm.) Feet wanting.

3. From Capt. Hodge, commanding the guard-ship 'Sesostris,' at Port Blair.

Two additional collections of sundries from that locality. The list of Andamánese mammalia is now extended to five species; *viz.*

Paradoxurus musanga (? Marsden), *v. typus* (?), F. Cuvier. Skull and other bones of a very aged individual, having naturally lost all of its true molars and most of its præ-molars, and the sockets of most of those of the lower jaw being completely closed up by deposition of bone; a single root only remains of three of the upper præ-molars respectively, and three præ-molars remaining in the lower jaw are worn away nearly to their bifurcation. The bones of the skull and face had long been completely united. The incisors, also, had been naturally dropped, save the outermost above, which is almost worn to the root; and the canines are excessively abraded, but what remains of them is remarkable for extraordinary size, considerably exceeding those of the common P. musanga of Bengal, &c. This disposes me to hesitate in identifying the species positively, though in other respects the size and form of the skull accord satisfactorily with P. musanga. Dr. Gray, in his British Museum catalogue, and the late Dr. Horsfield, in his catalogue of the specimens of mammalia in the India-house museum, regard the Malayan P. musanga and the Indian *P. typus*, F. Cuv., as distinct species; but in Lower Bengal this animal varies much, some individuals being without markings and others being marked very strongly and undistinguishably from the Malayan specimens in our collection. It inhabits the whole eastern coast of the Bay of Bengal and Malacca Straits; and as it is quite impossible to distinguish many Bengal specimens from ordi-

nary Malaeca specimens, I have no hesitation in following Dr. Cantor in regarding them as one and the same species.

The Andamán animal, with its extraordinarily large canines, may prove to be different; but it is likely that we shall soon receive a skin of it, that would help to decide the question. It is the species which has been lately noticed in various Indian Journals as "a sort of Mungoose" and "a kind of wild Cat;" and it is the only one as yet discovered in the Andamán islands appertaining to the Linnæan order *Feræ*.

Mus (Leggada ?) andamanensis, nobis, *n. s.* The indigenous Rat of the Andamáns,—a gigantic representative of the group Leggada, Gray, founded on the Mus platythrix, Bennett, and M. lepidus, Elliot, and to which my M. spinulosus (*J. A. S.* XXIII, 734), obtained both in the Pánjáb and in S. Malabar, is likewise referable. Size about half that of full-grown Mus decumanus, with tail fully as long as in that species; the colour of the upper-parts a shade or two darker, and of the lower-parts pure white. Form more slender, and the limbs proportionally less robust, than in M. decumanus. Fur much coarser and conspicuously spinous, with a few long black fine hairs intermixed; passing the hand along the fur in a backward direction, a very audible crackling sound is produced. The flat spines are similar in character to those of my Prickly Dormouse from Malabar (Platacanthomys lasiurus, *J. A. S.* XXVIII, 289), but are very much weaker; and the fur of the under-parts is soft. In fact this species is a magnified representative of M. spinulosus, but with the rodent tusks proportionally much more robust; the two holding the relationship of Rat and Mouse towards each other. Length 8 or 9 in., and tail equal to the head and body; hind-foot with claws $1\frac{1}{2}$ in.: ear-conch (posteriorly) $\frac{3}{4}$ in. Length of dorsal spinous fur $\frac{5}{8}$ in.; the spines being whitish on their basal half, and there is a soft dark ashy felt below the surface.

Mus manei, Gray. Taken from the stomach of a venomous Snake, from Port Blair; but too far softened by digestion to permit of the species being determined with absolute accuracy. (A good specimen has since been received entire in spirit.)

Sus andamanensis, nobis (*J. A. S.* XXVII, 267, XXVIII, 271).

A nearly perfect skeleton of an adult boar; the tail being, however, unfortunately again deficient.*

HALICORE INDICUS, Owen, *vide (J. A. S.* XXVIII, 271.

* Since mounted; and the height at the shoulder is 19 or 20 in.—Can this be the species noticed in Bingley's *History of Quadrupeds*, as an inhabitant of Sumátra, and which certainly cannot be the SUS VITTATUS, S. Müller, which is the only species of wild Swine at present recognised as inhabiting that island, being also found in Java and Banka? For an enumeration of the wild Swine of the archipelago, *vide J. A. S.* XXVII, 268.

"A species of wild Hog in Sumátra, of a grey colour, and smaller than the English Swine, frequents the impenetrable bushes and marshes of the sea-coast; they associate in herds, and live on crabs and roots. At certain periods of the year they swim in herds, consisting of sometimes 1000, from one side of the river Siak to the other at its mouth, which is three or four miles broad, and again return at stated times. This kind of passage also takes place in the small islands, by their swimming from one to the other. On these occasions they are hunted by the Salettians, a Malay tribe, residing on the coasts of the kingdom of Siak.

"These men are said to smell the Swine long before they see them, and when they do this they immediately prepare their boats. They then send out their Dogs, which are trained for this kind of hunting, along the strand, where, by their barking, they prevent the Swine from coming ashore and concealing themselves among the bushes. During the passage the boars precede, and are followed by the females and young, all in regular rows, each resting its snout on the rump of the preceding one. Swimming thus in close rows, they present a singular appearance.

"The Salettians, men and women, meet them in their small flat boats. The former row and throw large mats, made of the long leaves of the *Pandanus odoratissima*, interwoven through each other, before the leader of each row of Swine, which still continue to swim with great strength, but soon pushing their feet into the mats, they get so entangled as to be either disabled altogether from moving, or only to move very slowly. The rest are, however, neither alarmed nor disconcerted, but keep close to each other, none of them leaving the position in which they were placed. The men then row towards them in a lateral direction; and the women, armed with long javelins, stab as many of the Swine as they can reach. For those beyond their reach they are furnished with smaller spears, about six feet in length, which they dart to the distance of thirty or forty feet with a sure aim. As it is impossible for them to throw mats before all the rows, the rest of these animals swim off in regular order, to the places for which they had set out, and for this time escape the danger; and the dead Swine, floating around in great numbers, are then pulled up and put into larger boats, which follow for the purpose.

"Some of these Swine the Salettians sell to the Chinese traders who visit the island; and of the rest they preserve in general only the skins and fat. The latter, after being melted, they sell to the Maki Chinese; and it is used by the common people instead of butter, as long as it is not rancid, and also used for burning in lamps, instead of cocoa-nut oil."

I have somewhere read a similar account of the habits of S. PAPUENSIS.

Of the large Indian Hogs, I am now satisfied of the existence of three well marked races, or species, which are quite as distinct from each other as are the various species of the archipelago, figured and described by Dr. S. Müller and others.

One is the proper Bengal boar, found also in Kuták, which is by far the most powerful, as shewn by the entire skeleton, and which has the longest and most formidable tusks of any, the lower commonly protruding from the socket from 3 to 3½ in. over the curve. It is specially distinguished by the breadth of its

Of birds, fifteen additional species have been added to the sixteen mentioned in p. 272 *et seq.* and p. 412; but as yet we have hardly made a beginning with the ornithology of the Andamáns.

Of new species, the most notable is a superb large black Woodpecker of the division MULLERIPICUS of the late Prince of Canino (*Hemilophus*, Swainson).

M. HODGEI, nobis, *n. s.* Wholly black in both sexes, except the crown, occiput, and moustaches of the male, which are vivid crimson as usual, and the occiput only of the female. It is smaller than M. HODGSONII, (Jerdon), of Malabar, or M. JAVENSIS, (Horsfield), of the Malayan peninsula and more western islands; the closed wing measuring but $7\frac{1}{4}$ in., the middle tail-feathers 6 in., and the beak to forehead $1\frac{3}{4}$ in.

ANTHUS RUFOSUPERCILIARIS, nobis, *n. s.*; *A. pratensis* apud nos, *J. A. S.* XXIV, 473, from Pegu. Like A. PRATENSIS, but with the

occipital plane, which is 2 to $2\frac{1}{4}$ in. where narrowest, and by the shortness of the tail, which numbers only 13 or 14 vertebræ. This may be distinguished as S. BENGALENSIS, nobis.

Another is the ordinary S. INDICUS, Gray (*S. cristatus*, Wagler), as noticed by Dr. Gray from the Madras Presidency; it being found over the whole of India, the highlands of Ceylon, and also in Arakan, but I cannot pronounce on its diffusion further. It is likewise an inhabitant of Lower Bengal, as we have a stuffed specimen of a particularly fine boar of this race that was speared near Calcutta. The domestic Pigs of India appear to be mainly (if not wholly) derived from it. The entire skeleton is conspicuously less robust than in the preceding, the tusks less developed, the lower rarely projecting $2\frac{3}{4}$ in. from the socket; the occipital plane where narrowest rarely exceeds $1\frac{3}{4}$ in., and the tail is conspicuously much longer, consisting of about 20 vertebræ. We have the skull of a sow of this race, which has the fully developed tusks of the boar,—of course a rare anomaly.

The third is the species with very elongated skull and narrow occipital plane, where narrowest 1 in. only, inhabiting the lowlands of Ceylon, which I denominated S. ZEYLANENSIS in J. A. S. XX, 173, and which may also be S. AFFINIS, Gray, from the Nilgiris, mentioned in the *List of the Osteological Specimens in the Collection of the British Museum*, where S. INDICUS is cited from the Nepal hills and *tarai*, and also Malabar.

I have no skull of an European wild Boar for comparison, but judging from Blainville's figures, our S. INDICUS approximates it more nearly than S. BENGALENSIS or S. ZEYLANENSIS.

In the new Russian territory of the Amûr, it appears,—"Of Cattle or Horses few were seen, but many *Swine of a peculiar kind*, and Fowls." *Journ. Roy. Geogr. Soc.* XXVIII (1858), p. 381. Wild Hogs are found at all elevations in the Himalaya, and generally over Asia. Those of Indo-China, China, and the Malayan peninsula require to be carefully examined. As many as three species are reported to inhabit the plain of Mesopotamia. Wood, in his *Journey to the Source of the Oxus*, remarks that—"Descending the eastern side of Junas Darah, our march was rendered less fatiguing by following Hog-tracks in the snow. So numerous are these animals, that they had trodden down the snow as if a large flock of Sheep had been driven over it."

supercilium and moustachial streak of a ruddy rust-colour. Closed wing $3\frac{1}{4}$ in., tail $2\frac{1}{4}$ in., and bill and hind-claw as in A. PRATENSIS, of which it may be regarded as a local variety or sub-species.

OREOCINCLA INFRAMARGINATA, nobis, *n. s.* Uniform dark olive above, with conspicuous pale rufescent-whitish supercilia, and light rufescent spots tipping the wing-coverts; beneath pale, inclining to rufo-fulvous on the breast and front of the neck, pure white at centre of belly; the lower tail-coverts dark olive largely tipped with white; each feather of the lower-parts, except on middle of throat and of belly, somewhat narrowly tipped with the colour of the back; outer caudal feathers successively more largely tipped with dull white, though even on the outermost these white tips are but slight. The usual OREOCINCLA markings on the inner surface of the wing. Bill dusky, and legs pale corneous. Closed wing $4\frac{5}{8}$ in.; tail $3\frac{1}{2}$ in., its outermost feathers $\frac{3}{8}$ in. shorter than the middle pair; bill to gape $1\frac{3}{16}$ in.; tarse $1\frac{1}{16}$ in. Short first primary $\frac{3}{4}$ in. long, the second equalling the fourth and a little shorter than the third. This bird approximates the female of MERULA WARDII, Jerdon.

Three other species of true Thrushes inhabiting the Andamáns are —TURDUS RUFULUS, Drapiez (*modestus*, Eyton), GEOCICHLA INNOTATA, nobis, and PETROCOSSYPHUS PANDOO. The following have likewise to be added,—MEROPS PHILIPPINUS, L., LANIUS PHÆNICURUS, L., ARUNDINAX OLIVACEUS, nobis, PERICROCOTUS SPECIOSUS, (Lath.), HIRUNDO RUSTICA, L. (juv.), OSMOTRERON CHLOROPTERA, nobis (heretofore only known from the Nicobars), CHALCOPHAPS INDICUS (identical with the Indian race, but different from a pair received from the Nicobars, which seem to be CH. MARIÆ, C. L. Bonap.); THALASSEUS AFFINIS (*Sturna affinis*, Raffles, *St. bengalensis*, Lesson, &c.), and ONYNOCHOPRION ANASTHÆTUS, (Scopoli).

The EDOLIUS of the Andamáns appears to be constantly a little larger than Malayan peninsula specimens, with more tendency to shew a rudimental frontal crest; this, however, is less developed than in Burmese and Tenasserim specimens.

Of TEMENUCHUS ERYTHROPYGIUS, nobis, I have seen no Andamán example yet with distinctly rufescent upper tail-coverts.

The black-naped Oriole I think will prove to be ORIOLUS CORONATUS, Sw. (*hippocrepis*, Wagler), being quite distinct from that of the neighbouring Nicobar islands, O. MACROURUS, nobis.

The *Dháyal* (COPSYCHUS SAULARIS) is common, and differs in no respect from that of Bengal and of India generally, as distinguished from the larger race of W. Malasia; but the *Sháma* (KITTACINCLA ALBIVENTRIS, nobis,) has much the appearance of being a fertile hybrid between K. MACROURUS and COPSYCHUS SAULARIS! In several specimens of it, however, I can detect no variation whatever, nor transitional examples variously intermediate; and the female more nearly resembles the male than in K. MACROURUS. I have a fine healthy pair of the Andamán *Sháma* alive, and the male is a fair songster, with some very deep notes alternating with some shrill and very *Dháyal*-like notes; and, so far as I have heard as yet, the song is more broken or delivered in snatches, like that of the *Dháyal*, or less continuous than in the common *Sháma*. The bird is also rather larger, with the bill somewhat larger in proportion; but I doubt if any practised ornithologist would hesitate about classing it in KITTACINCLA rather than in COPSYCHUS. There is a third *Sháma*, with a white head (as I am informed), in Borneo (K. STRICKLANDI, Mottley and Dillwyn); and a fourth species exists in K. LUZONIENSIS, (Kittlitz), of the Philippines. The female of the Andamán *Sháma* is of a duller colour than the male, especially on the wings and breast, which latter is glossless black; tail also shorter; and the legs in both sexes are carneous.

Of reptiles, the marine *Testudinata* of the Bay occur of course; but we have only received a very large skull of the common 'Loggerhead' Turtle (CAOUANA OLIVACEA), a species which is common towards the mouths of the Gangetic streams, and is often eaten here for the true edible Turtle (restricted CHELONIA); and here I may remark that I once received a young living 'Hawk's bill' or tortoise-shell producing Turtle (CARETTA IMBRICATA) from the interior of the Sundarbáns, which I kept alive for many months in fresh water. The 'Loggerhead' skull from the Andamáns measures $8\frac{1}{4}$ in. long, inclusive of occipital projection, and $4\frac{3}{4}$ in. in extreme breadth.

Of the *Loricata* or Crocodiles, it does not appear that any have yet been observed about the islands.

Of *Varanidæ*, a HYDROSAURUS quite similar to one before received from the Nicobar group. I can perceive no difference from the common H. SALVATOR, (Laurenti) *v. Varanus bivittatus*, (Kuhl), in

structure; but it wants the pale neck-streaks and body and caudal rings of ordinary H. SALVATOR of Bengal, Ceylon, &c., while the upper-parts are freckled throughout (save on the head) with white scales and tips of scales interspersed among the black scales, more copiously on the tail, and tending to form close and narrow transverse lines on the sides. I have never seen this marking in specimens of true H. SALVATOR obtained elsewhere; and it may be remarked that this species commonly attains the dimensions assigned by Dr. Gray to his Australian H. GIGANTEUS, viz. 78 in. We have examples of that length both from Lower Bengal and from Ceylon; and the occurrence of this reptile in Ceylon is the more remarkable, as it does not appear to have been hitherto observed in the peninsula of India.

No *Scincidæ* have yet been received.

Of *Geckotidæ*, two species, both of which appear to be undescribed.

PHELSUMA ANDAMANENSE, nobis, *n. s.* Differs from PH. CEPEDIANUM, (Peron), of the Mauritius, by having a rather (yet distinctly) less obtuse muzzle, which is conspicuously longer from the eye to the nostril; the auditory orifice is also much smaller, and round instead of oval; and the pattern of the markings of the dorsal surface is different. In PH. CEPEDIANUM, there are two sub-lateral pale lines, with intermediate pale spots more or less irregularly disposed: in PH. ANDAMANENSE, there are no sub-lateral lines, but a mesial one commencing on the nape and continued half-way along the back, the rest of the upper-parts being sprinkled with numerous spots which appear to have been bright red or orange: the *palettes* at the tips of the toes are pale in the Mauritius species, dark in the other; and I can distinguish no femoral or præ-anal pores in PH. ANDAMANENSE, but a fold of skin in place of them along the thighs: in PH. CEPEDIANUM the femoral pores are continued to meet the opposite series, at an angle which completes a triangle with the transverse vent. On the chin of our present species, there is a series of five plates of equal size and larger than the rest, anteriorly adjoining the labial plates. Length of head and body 2 in.; the tail, which had been renewed, $1\frac{5}{8}$ in.

There can be no hesitation in referring this Gecko to PHELSUMA, Gray, though the former has hitherto been known to exist only in Madagascar and the Mascarine islands. The other appears to be a new form altogether:—

PUELLULA, nobis, *n. s.* Aspect of a HEMIDACTYLUS, but with no dilated palette on the toes, which are distinctly ribbed excepting on the unguinal phalanges. No femoral or præ-anal pores, but a large raised glandular space at the base of the thighs underneath, divided by a slight median groove on the anterior half, which deepens to form a large glandulous cavity on the posterior half, the labia of which are covered with scales larger than the rest; this structure being much less developed in the female sex. A very remarkable feature, for a Gecko, consists in a distinct rudimentary dorsal crest; and there is also a lateral fold of skin from the fore to the hind limbs, dividing the scales of the back from those of the belly, and another such fold margining the thighs anteriorly. The pupils of the eyes close vertically.

P. RUBIDA, nobis, *n. s.* Back and limbs above covered with minute tubercles, and also thickly studded with tubercles of a larger and uniform size, the former requiring a lens for their easy detection; on the tail are few only of the larger kind, and those disposed in transverse series on its basal half: scales of the head minute and uniform, those of the throat very minute, and those of the lower-parts small and uniform, save on the borders of the glandulous fissure, where they are a little larger; on the lower surface of the tail the scales are also larger. Bordering the lower labial shields in front are four large plates, the medial of which exceed the outer in size. Colour of the fresh animal very ruddy, a hue which soon disappears by exposure to the light in spirit. In the stronger-marked specimens a dark line passes backward from the eye, and meets its opposite upon the occiput; this V-like marking being succeeded by one or two others like it, and there are irregular narrow transverse bands throughout, composed of black tubercles interspersed among the rest, and a series of broad dark annuli on the tail. Length about 5 in., of which the tail is half. A common species at Port Blair. The young, 2 in. long, show some white specks on the neck, and the labial plates are alternately dark brown and white. This is also seen in the adults, but less conspicuously.

Of *Agamidæ*, a species of TIARA, D. and B.

TIARA SUBCRISTATA, nobis, *n. s.*: DILOPHYRUS apud nos, *J. A. S.* XXVIII, 275. Occiput and nape with a low crest, and merely a slight

serrated ridge along the back : gular pouch in the males only, covered with small keel-less scales of equal size ; the other scales of the lower-parts conspicuously carinated ; those of the upper-parts minute, arranged in irregular transverse series (as best seen by aid of a lens), their keels presenting a tuberculated appearance except towards the ridge of the back : a row of about ten large tubercles on each side commencing from the occiput. Colours various, but fugitive in spirit ; the young being much speckled and reticulated with greyish-black, and the full-grown mostly plain, with dark bands on the tail more or less distinct. Length 12 in., of which tail 8½ in. Common at Port Blair.

Of Snakes, we have received five harmless and two venomous species. The former are—

Lycodon aulicus, (L.). Uniformly coloured variety.

Dendrophis pictus, (Gm.). Some beautiful varieties.

Dipsas hexagonotus, nobis, *J. A. S.* XXIV, 360. Several young specimens. The adult remains to be described.

Herpetodryas prasinus ; *Coluber prasinus*, nobis, *J. A. S.* XXIII, 291. Large. Also inhabits the base of the Himaláya, Asám, Tenasserim, &c.

Cerberus böeformis, (Schneider).

The latter—

Hamadryas vittatus, (Elliot).

Trimesurus viridis, (Lacepéde), var. *Cantori*, nobis, *J. A. S.* XV, 377. A Trimesurus which appears to be exceedingly common both in the Andamán and Nicobar islands is altogether similar in structure to the common Tr. viridis, but varies much in colouring, being grass-green, brown, or blackish, either uniformly coloured or variously mottled ; but only in one mottled specimen from the Nicobars do I perceive the lateral line on the scales bordering the abdominal plates, which is commonly seen in continental examples of Tr. viridis. In a green example from Port Blair, 4 ft. in length (!), there is no trace of this ; but I may here call attention to the fact that there are certainly two nearly affined species confounded under Tr. viridis. One common in Lower Bengal has the scales more strongly carinated, very conspicuously so on the sides of the head, while those of the crown are roughly granular (a modification of the more developed keels), instead of being flat or almost flat as in the

other. In this race there is usually no lateral streak, and at most I have only seen it obscurely indicated; but there is a fine porphyraceous lustre on the grass-green scales of the head and body, which does not occur in the true VIRIDIS. If considered worthy of a name, it may therefore bear the appellation PORPHYRACEUS.

Of *Batrachia*, I cannot learn that any species has yet been observed at Port Blair.

The collection of fishes is so large and important that I have made it the subject of a special report. As many as 106 osseous species have already been received from Port Blair;* the genera SALARIAS, GLYPHISODON, and MURÆNA, being extraordinarily developed. Of MURÆNA alone, I make out sixteen species already received! A considerable proportion of the species appear to be quite new, being described neither in the *Histoire des Poissons*, in the more recent elaborate essays by Dr. Bleeker, nor by Sir J. Richardson and other authorities. No fresh-water species has been received; but a few mud-skippers, as the PERIOPTHALMUS PAPILIO, (Bloch),—a fine series, and the young of which species is *P. fuscatus*, nobis, *J. A. S.* XXVII, 271.†

A considerable number of *Crustacea*, *Mollusca*, and *Radiata* have likewise been received from Port Blair; but though I have mostly determined the genera and species, I have not at present the leisure to draw up a report on them.

4. The Rev. H. Baker, Junr., of Mundakyam, Alipi, S. Malabar.

A dozen skins of the Spiny Dormouse (PLATACANTHOMYS LASIURUS, nobis, *J. A. S.* XXVIII, 289), five skins of MUS (LEGGADA) SPINULOSUS, nobis (*J. A. S.* XXIII, 734), identical with Punjáb specimens,—one of a small Mouse affined to, if not identical with, M. ALBIDIVENTRIS, nobis, of L. Bengal, but of which it is desirable to

* Several more have since come to hand.

† *Salarias olivaceus*, XXVII, p. 271, is identical with S. LINEATUS, C. V.; *Gobius breviceps* is the young of G. ALBOPUNCTATUS, C. V.; *Apogon 5-vittatus*, p. 272, is the young of GLYPHISODON RAHTI, C. V.; *Serranus lanceolatus*, C. V., is the young of S. COIOIDES, (B. H.), v. *S. suillus*, C. V.; *Gerres poetæ*, C. V. = *Chanda setifer*, (B. H.), *ergo* G. SETIFER, though the name better applies to G. FILAMENTOSA, C. V., which I have also obtained; *Pelotus nitidus* = MESOPRION GUTGUTEA, (B. H.) C. V., though the generic name POLOTUS may stand; and PANCHAX CYANOPTHALMA, p. 288, is the unnamed species figured in *As. Res.* XIX, pl. , f. , but in the living fish the azure eye is much less noticeable. I have since long kept this species in an *aquarium*, and it is less of a surface fish in its habits than the P. BUCHANANI, C. V.

have more examples for comparison,—and a young *Gho-sámp* (Monitor dracæna).

5. Capt. W. H. Lowther, in command of the 1st Asám Local Battalion. Skin of a Binturong (Arctictis binturong), killed on the Singpho frontier of Upper Asám, where termed by the natives *Young*. Important with reference to the geographical distribution of this remarkable animal.

6. H. M. the ex-King of Oudh. A Snake (Dendrophis ornata); and since a dead Monkey (Presbytis cephalopterus).

7. Prince Mahomed Julaludin, of Baligunge. A Snake, the *Ráj-sámp* of the Bengalis (Bungarus fasciatus).

8. Babu Rajendra Mallika. Various dead animals, including a superb male Golden Pheasant in perfect plumage, which has been set up in a manner worthy of its beauty. I take this opportunity to remark, that among the objects of particular interest now living in the aviaries of our contributor, are two very distinct species of Cassowary. The Bábu has also magnificent adult hybrids, of both sexes, raised from the male Pavo muticus and female P. cristatus, the two species being beautifully blended in colouring, form of crest, &c.; and, still more remarkable, he has a hybrid now nearly full-grown, bred between a Curassow and Guan! Numerous other living specimens of great interest adorn his collections.

One of the Cassowaries being clearly of a new and fourth species of its genus, of which quite recently only one species was known, I shall here indicate it as

Casuarius unappendiculatus, nobis, *n. s.*, from its peculiarity of having but a single pendulous caruncle in front of the neck. Specimen apparently more than half grown, and much paler in the colouring of its plumage than specimens of the same age of the common C. galeatus, two fine examples of which are associated with it in the same paddock. In lieu of the two bright red caruncles of the latter, the new species has but a single small oblong or elongate oval *yellow* caruncle, and the bright colours of the naked portion of the neck are differently disposed. The cheeks and throat are smalt-blue, below which is a large wrinkled yellow space in front of the neck, terminating in front in the oval button-like caruncle, and its lower portion being continued round behind, while on the sides of the

neck, the yellow naked portion is continued down to its base, the bordering feathers more or less covering and concealing this lateral stripe of unfeathered skin: on the hind-part of the neck the bare yellow skin is not tumous and corrugated as in the common Cassowary, where also this part is bright red. The casque is about equally developed at this age in the two species. The legs of the new species are smaller, from which I doubt if it attains to quite so large a size as the other.

The known species of CASUARIUS now range as follow:

1. C. GALEATUS, Vieillot: *C. emeu*, Latham; *Struthio casuarinus*, L. Hab. N. Guinea. Eastern Moluccas.

2. C. BENNETTII, Gould (figured in *P. Z. S.* 1851, pl. 7). The *Mooruk*. Hab. N. Ireland.

3. C. AUSTRALIS, Gould. Hab. York peninsula, N. E. Australia.

4. C. UNAPPENDICULATUS, nobis. Hab. ——— ?*

9. Alex. Thomas, Esq., in medical charge of Khyook Phoo, Ramri, Arakan. A fine specimen in spirit of PLATYDACTYLUS GECKO, (L.)

10. Mrs. Turnbull. A fine stuffed specimen of PETAURUS SCIURIUS, (Shaw).

11. H. H. Atkinson, Esq. A few bird-skins procured at Singapore.

12. The Rev. J. Cave Browne, late of Subathoo. A small collection chiefly reptiles in spirit, with a few insects, procured in that neighbourhood.

* In the *Conspectus Ineptorum et Struthionum* of the late Prince of Canino, published in the *Comptes Rendus, tom.* XLIII (1856), 840-1, only one species of CASUARIUS is recognised (!); but a second DROMAIUS or Emeu, as DR. ATER, Vieillot, from "Isle Decrès," which would appear to be already extinct; while a third species, from the interior of Australia, with transversely barred plumage, has recently been brought to the notice of the Zoological Society. H. H. also indicated a second Ostrich doubtfully, as STRUTHIO EPOASTICUS, C. L. Bonap., which is doubtless the northern race with smooth and poreless egg-shell noticed in *J. A. S.* XXVIII, 282. The two living species of Nandou, or RHEA,—the three-toed American Ostrich,—are of course recognised; and at least three, if not four (!), living species of APTERYX; with no fewer than 38 species, more or less satisfactorily made out, of *Inepti* and *Struthiones* of various zoological epochs; but the knowledge of the greater portion of these is vague in the extreme; and the Prince's bold attempt at classification of them will simply, as such, meet with approval. At the head of the *Inepti* he places the huge EPIORNIS of Madagascar, a fragment of the egg-shell of which I have recently procured for the Society's museum, presented to by M. Zill. This giant bird appears to have been first indicated (to Europeans) by the missionary Ellis, though not scientifically brought to notice. The natives of Madagascar imagine that the eggs of the EPIORNIS are those of some huge saurian.

Of Lizards, the common CALOTES VERSICOLOR, a small and young RIOPA, and a beautiful new Gecko congeneric, with that described from the mountainous interior of the Tenasserim provinces, in *J. A. S.* XXVIII, 279.

NAULTINUS (?) FASCIOLATUS, nobis, *n. s.* Tail proportionally longer and more slender than in N. (?) VARIEGATUS, nobis, *l. c.*; but the larger of two specimens evidently not full-grown. Head very similar to that of the other; but the dark band behind the eye bending abruptly to meet its opposite on the occiput; this is followed by 23 other blackish cross-bands, continued to the end of the tail, those of the body being edged and set off posteriorly with whitish; a series of broad sub-haxagonal plates in both species beginning near the vent, and continued to the end of the tail underneath. Abdominal scales proportionally smaller than in the other, and no group of conspicuously larger scales anterior to the vent. The sub-caudal scales are also much smaller than in the other. Larger specimen $4\frac{7}{8}$ in., of which tail $2\frac{3}{4}$ in. Both species are remarkable for the beauty of their markings.

Of Snakes, CORONELLA RUSSELLII, (Daud.), COLUBER MUCOSUS, (L.), DIPSAS TRIGONATA, Schlegel, VIPERA RUSSELLII, (Shaw), and two species which appear to be new:—

DIPSAS MULTIFASCIATA, nobis, *n. s.* Form typical; the muzzle shorter and rounder than in D. TRIGONATA: the same whitish spots along the ridge of the back as in that species, but somewhat indistinctly defined; and narrow black transverse bands on the sides, numbering as many as 72 from neck to vent, beyond which they are broken into spots: throat dull white; the abdominal surface densely speckled throughout with triangular black spots, which are more or less continued into lines. Length of specimen (evidently young) $14\frac{1}{2}$ in., of which tail 3 in.

For the other I must constitute a genus:—

PLATYCEPS, *n. g.* Like COLUBER (CORYTHODON, D. B.), but with exceedingly flat head, and tail only about a sixth of the total length.

PL. SEMIFASCIATUS, nobis, *n. s.* Colour olive-grey above, white below; the posterior two-fifths without markings, and the nuchal region marked with broad transverse black bands, having lateral black spots alternating on either side. These gradually become

narrower and are broken into alternate bands on the second fifth of the body, being still more broken into small spots on the third fifth, beyond which they gradually disappear anterior to the vent. Eyes of moderate size. Specimen evidently young. Length about $10\frac{1}{2}$ in., of which tail about 2 in., its extreme tip being lost in the specimen. *Scutæ* 187; *Scutellæ* —— ?

P. S.—It appears that a species of Deer, which has been named Cervus pseudaxis, has recently been received in France from the mountainous regions of the north of China and Mantchceria. From the geographical region it cannot be a true *Axine*, and the name would imply its being an Axis-like (or *spotted)* species,—just possibly identical with the Formosan Deer.

E. Blyth.